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RESULTS OF THE JOINT DOD/OFPP COMPETITION WORKSHOP HELD 12-13 M--ETC(U)
MAY 81

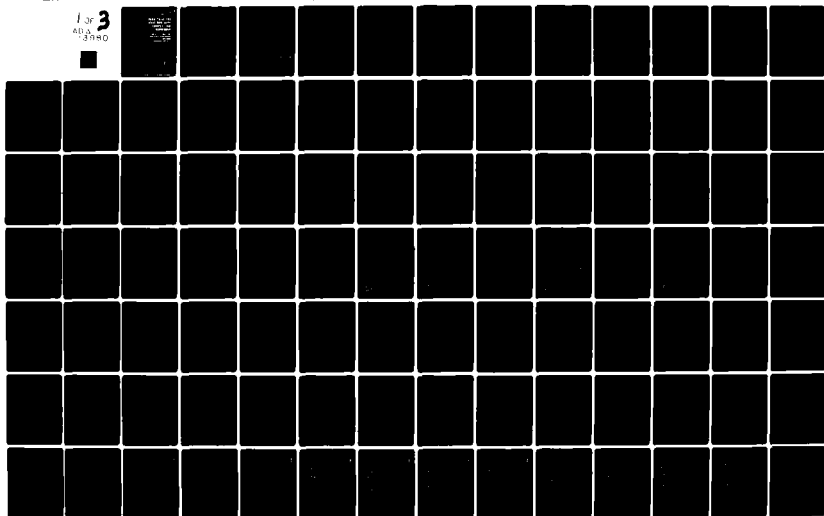
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OFFICE OF FEDERAL PROCUREMENT POLICY

AD A113980

RESULTS OF THE JOINT DOD/OFPP COMPETITION WORKSHOP

**HELD 12-13 MAY 1981
NEW EXECUTIVE OFFICE
BUILDING
WASHINGTON, D.C.**

MAY 1981

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RESULTS OF THE

JOINT

DEPARTMENT OF DEFENSE/OFFICE OF FEDERAL PROCUREMENT POLICY

COMPETITION WORKSHOP

May 12/13, 1981

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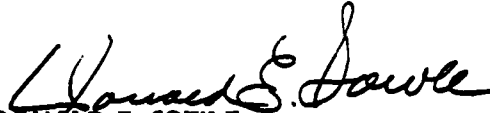
PREFACE

I feel the Joint DOD/OFPP Competition Workshop was successful in drawing out the main issues today in the use of competition. The results will be useful in drafting effective policy and guiding the conduct of research. I thank all those who participated and look forward to a continuing dialogue.



ROBERT F. TRIMBLE
Acting Deputy Under Secretary
(Acquisition Policy)
Office of the Under Secretary of
Defense (Research and Engineering)

This workshop brought together over fifty people currently concerned with the proper implementation of competition and gave them an opportunity to intensively discuss common problems. I am proud to endorse the results of the workshop and they will be used in the development of the new Federal Procurement System coverage on competition.



DONALD E. SOWLE
Administrator for Federal
Procurement Policy
Office of Management and Budget

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AFTER ACTION SUMMARY

BACKGROUND.

A Joint Department of Defense/Office of Federal Procurement Policy (DOD/OFPP) Workshop on Competition was held on 12 and 13 May 1981 at the Office of Federal Procurement Policy. Over 50 participants from the Department of Defense, civil agencies, and outside organizations attended.

The need for this forum was first recognized during the Ninth Annual DOD/FAI Acquisition Research Symposium held at Annapolis, Maryland, June 1980. After becoming aware of the proposed workshop, DOD and the Office of Federal Procurement Policy endorsed the ideas of the workshop and authorized its development and execution. The Army Procurement Research Office (APRO) was the executive activity for DOD, and the Federal Acquisition Institute was executive activity for civil agencies in conducting this workshop.

OBJECTIVES OF WORKSHOP.

Attendees of the workshop were operational managers, policymakers, and researchers from various Federal agencies and outside organizations who have done significant research in the area. The main purposes were to focus on recent experience in competitive procurements and to review recent research on competition in major systems acquisition, primarily. The workshop was also to promote discussion between operation managers and researchers seeking to advance effective competition. The specific objectives were to:

- o Gain mutual understanding of competition.
- o Discuss and interpret recent research results.
- o Exchange ideas on competition research and policy.
- o Consider future directions in research and policy.

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SUMMARY OF WORKSHOP PRESENTATIONS AND DISCUSSION.

Mr. Sowle, Administrator-Designate, OFPP, and Mr. Trimble, Acting Deputy Under Secretary of Defense Research and Engineering (Acquisition Policy), delivered keynote addresses to the workshop. Mr. Sowle expressed the hope that results of the workshop would be helpful in developing the competition section of the New Federal Procurement System. He felt an important contribution of the workshop would be the proper articulation of this difficult subject to Congress.

Mr. Trimble saw the workshop as a forum for exploring new concepts and ideas for dealing with competition. He also viewed it as an opportunity to dispel some of the myths, espoused by those outside procurement, that the subject lacks attention.

After the keynote addresses, an introductory talk on basic issues of competition, including historical perspectives, potential advantages, and leading areas for research, was given by the Program Chairman (1). Particular emphasis was placed on the multifaceted nature of competition. Competition has different objectives and measures of effectiveness in different situations and is not universally accepted, for example, by industry buyers and in other countries. It was further pointed out that although competition on a macro or commodity level is important, the workshop would concentrate on micro issues, that is, competition on a program or contract.

The topic of the first session was competition planning. Speakers discussed types of competition, competition strategies, and barriers to competition (2, 3, 4). A recurring theme was the inadequacy of the Defense Acquisition Regulation categorization of competition and the lack of a

means to measure the effect of competition. Attendees stressed the importance of setting realistic objectives and articulating this realism to all interested parties. A range of techniques for effecting competition was presented (3). Barriers to competition, both factual and perceived, were recognized. Acquisition managers often perceive barriers to competition without assessing the marketplace (4).

A common point of contention was the role of the contracting officer and program manager (PM) in planning for competition. There was concern that current DOD initiatives would place the decision on competition with the PM. The consensus of the group was that the two should work as a team in a check and balance relationship.

Other areas of concern that arose in this session were:

- Affordability and competition - the need for resources to bring on competition suggests the trading off of programs, or in other words, affordability issues.
- The negotiation authority for the leader-follower technique - exception 16 to DAR (10 OSC 2304.(a)(16)) (authority to negotiate to improve the mobilization base) is commonly used, but may not be the appropriate approach.
- Investment - intentions are one thing, but funding to develop a second source remains a serious obstacle.
- Secondary, subcontract, base support and breakout to competition - we should also improve competition below the major system level.
- Competition status on programs - how do we tell how well we are doing?

- Mission vs. individual objectives - individuals may be more motivated by their own needs (e.g., promotion) than the need to take a risk to obtain potential benefits of competition.

The major portion of the workshop was spent on the competition decision itself (4-13). Operational managers stressed the strategies considered (e.g., leader-follower, use of technical data package (TDP), teaming) and the criteria used to make the decision on competition (5, 11, 12, 13). Cost comparisons and qualitative issues such as technological risks were featured (5, 12, 13). Generalizations as to the conditions needed for various strategies (e.g., validated TDP needed for TDP strategy, high volume for teaming) were made (6). Although competition was sought to save money, other objectives were also sought, such as increasing the mobilization base or leverage over a contractor.

Researchers described the data bases they had accumulated and the findings they had gained (6, 7, 8, 9, 10). While there has been considerable work, attendees agreed more could be done. Main areas discussed were:

- Incumbent prices reflecting learning curve progress (not last sole source bid price) should be used to calculate competitive savings (6, 8, 9).
- Learning curve shifts occur for prospective new sources (to reflect competitive pressure (6, 8, 9).
- Learning curve rotations may occur for prospective new sources (to reflect improved techniques used (8, 9).
- The importance of the effect of production rate on learning curves is still uncertain (7).
- The applicability of production learning curve concepts in competition on service contracts is now being researched (9).

- The use of a gross model, for example, a simple learning curve shift savings model, to calculate rough savings may be appropriate in order to test the feasibility of competition in procuring a system and an economic analysis to calculate the actual savings of competition on a system (8).

- The interaction of competition and multiyear procurement (savings, innovation, program control) is still unknown.

- Savings differ by type of procurement (major system buyout, secondary items, multiple repetitive awards).

- Second source learning behavior may differ because of commodity complexity.

In the last session the group attempted to summarize the views expressed during the workshop (14). In particular, it was agreed that competition could not be seen as universally "good" and that policy should be realistic in giving guidelines for the establishment of objectives for competition and in conditions for its use. Terms such as "full and free," "real," "meaningful," and "reasonable level of" competition were debated. Policy should address both technical and economic benefits with sufficient flexibility to deal with a variety of situations. It was generally felt that management must recognize that fostering effective competition requires committed resources up-front. The benefits and barriers to competition were again reviewed, as well as the means to measure benefits of competition.

Initiating competition should be the joint responsibility of the PM and the contracting officer. However, many suggested that because the PM emphasized system performance, competition may not be a primary concern to him.

Another theme revisited was the classification of competitive and non-competitive procurements and the importance of giving a "true" report of competition to Congress and others. Not only should we determine the proper amount of competition, but we must code and record it correctly.

At the conclusion of the session research topics were solicited.

Suggested studies included:

- The relationship of cost growth and competition, a net assessment.
- The causes and costs of turbulence in Government contracts.
- The need to focus on competition effects by categories--commodities and systems.
- The proper coding of competition.

To conclude the workshop, Mr. Sowle asked the attendees to extend the ideas back at their offices and to share what they had learned. He expressed satisfaction with the workshop method for exchanging views and suggested it might be useful for other topics in the future.

FUTURE POLICY AND RESEARCH.

The results of the workshop suggest that future policy and research on competition should feature the following topics:

- Definition and taxonomy - What is competition, and what are its different parts and its varied objectives or benefits sought?
- Classification, measurement, and coding - What is competitive and noncompetitive procurement?
- Goals and reporting - What is a good or reasonable level of competition and how should goals and results be communicated to Congress and others?
- Investment and affordability - How do we make policy commensurate with resources and needs?

- Savings - How do we calculate savings for different types of competition?
- Competition and market structure - What kind of policy is appropriate to effect competitive savings at the commodity or industry level?
- Barriers - How do we minimize psychological or non-rational barriers to competition in our decision-makers?
- Strategies - What strategies are appropriate for the varying conditions (e.g., complexity, marketplace) of a given procurement?
- Competition relationships - What is the relationship between competition and multiyear procurement, cost growth, and program turbulence?

COMPETITION IN TRANSITION.

To the extent that collective inferences may be drawn from a session such as this, the following statements are submitted to represent the consensus of the participants in this meeting. First, competition is a dynamic force that when properly used is the best stimulus to arrest cost growth, generate optimal prices, and stimulate technological innovation. But, where marketplace forces or the factors of production (e.g., production quantities) do not inherently support competition, Government resources must be brought to bear in a timely fashion in order to secure the advantages of competition. In particular, money must be provided early in system life cycles to pave the way for competition.

Second, competition must be promoted and even nourished, but not mandated in an arbitrary manner. We should not assign quotas or goals in the forms of percentages or absolute dollars to the achievement of competition. Goals, such as for small business awards or EEO accomplishments, are simply not useful in dealing with competition for Government

contracts. In some years, the forces of the marketplace or the factors of production surrounding Federal Government acquisitions may permit considerably more or less competition than in other years. To establish arbitrary percentages or goals builds frustration and deters from the concerted managerial and operational effort that is required to secure meaningful competition under a given set of circumstances.

Third, competition is a highly complex and controversial force. In order to assure its sustenance and provide maximum benefits, continued research and operational experimentation must be applied throughout the Government procurement community. It is not enough to just talk about it or write about it, but actual investigations, examining past competitive efforts, trial procurements, and other innovative attempts must be used to expand competition beyond its present horizons. Without such effort, the marketplace forces and production constraints currently influencing governmental procurement may inhibit the expansion of competition beyond its present levels. We cannot continue to think of competition in the terms that our revolutionary forefathers did when they used it to expand the free enterprise system. Twentieth century and twenty-first century needs will require competition to secure the economies of free enterprise, but the competition we employ now and in the future will be substantially different from the competition used to buy the muskets, swords, and cannons of yesterday.

Finally, we need to get this message to the world beyond the procurement community. It is important that Congress, industry, and the public understand the need for competition as well as the requisites for achieving it and the forces which limit it.

USE OF THE WORKSHOP RESULTS.

In addition to wide distribution of this after-action report and the slides and dialogue accompanying the actual presentations, the results will be studied carefully by the task group formulating the competition input for the New Federal Procurement System. The results will also be provided to the Federal Acquisition Regulation Committee and the Defense Acquisition Regulation Committee for consideration and use. Additionally, this report and other material will be submitted to the acquisition schools at the Army Logistics Management Center and the Air Force Institute of Technology, where thousands of students are taught annually about the uses of competition in governmental procurement. The results will also be made available to contractors who teach specialized courses for Federal agencies in procurement. Finally, the research results will be made available to all activities that perform research for the Federal Government on competition to assist them in focusing future efforts on areas which have been identified as vital to the continued expansion of competition.

INDIVIDUAL PRESENTATIONS

THIS SECTION CONTAINS THE APPROXIMATE ACCOUNTS OF THE SCHEDULED TALKS GIVEN. THE ACCOUNTS VARY FROM GENERAL SLIDES TO FULL TEXTS, DEPENDING UPON THE FORMAT ACTUALLY USED BY THE AUTHORS. IN A FEW INSTANCES AUTHORS HAVE AUGMENTED THEIR ORIGINAL MATERIAL WITH INPUT FROM THE WORKSHOP DISCUSSION, BUT NO OUTSIDE MATERIAL WAS ADDED.

1. *Robert F. Williams, US Army*

JOINT DOD/OFPP WORKSHOP ON
COMPETITION
APPLICATION, RESEARCH, AND POLICY
AN OVERVIEW

**WORKSHOP
ADMINISTRATION**

- **MINIMUM ADMINISTRATION AND STRUCTURE WITH A
"PACING" AGENDA**
- **COFFEE/DONUTS - SELF HELP**
- **NO EVENING OR LUNCHEON ACTIVITY**
- **WORKSHOP FORMAT**
 - **PREPARED TALKS WITH SPONTANEOUS DISCUSSION**
 - **SESSION CHAIRMEN LEAD DISCUSSION**
- **SHOULD AVOID COMPETITIVE-SENSITIVE AND/OR
CLASSIFIED MATERIAL**

COMPETITION WORKSHOP

- OBJECTIVES
 - GAIN MUTUAL UNDERSTANDING OF COMPETITION
 - GIVE RESEARCH STATUS
 - EXCHANGE IDEAS ON COMPETITION RESEARCH
AND POLICY
 - SPECULATE ON FUTURE DIRECTIONS IN
RESEARCH AND POLICY

COMPETITION

DEFINITION: RIVALRY BETWEEN TWO OR MORE ENTERPRISES
TO SECURE PATRONAGE OF PROSPECTIVE BUYERS
(DICTIONARY)

POLICY: ALL PROCUREMENTS, WHETHER BY FORMAL
ADVERTISEMENT OR NEGOTIATION, SHALL BE MADE
ON A COMPETITIVE BASIS TO THE MAXIMUM
PRACTICABLE EXTENT (DAR 1-301)

REALITY: RELATIVELY LITTLE COMPETITION IN TERMS
OF DOLLARS (36%) AND ACTIONS (38%)
(DOD STATISTICS)

BACKGROUND

- COMPETITION FAVORED BY US FROM VERY BEGINNING
- YET BY 1890's BIG BUSINESS HAD THWARTED MAJOR
COMPETITION
- SINCE THAT TIME GOVERNMENT HAS LEGISLATED
AGAINST ANTI-COMPETITIVE PRACTICES --
SHERMAN ACT, CLAYTON ACT, FTC ACT
- FEDERAL LAW HAS FILTERED DOWN TO DAR 1-301
- COMPETITION SEEN AS A NATIONAL BENEFICIAL
CONCEPT, HAS CONSIDERABLE MYSTIQUE
- YET DOD AND OTHER AGENCIES ARE HAVING TROUBLE
IMPLEMENTING COMPETITION POLICY TO LARGE
EXTENT

POTENTIAL ADVANTAGES OF COMPETITION

INCREASED LEVERAGE

LOWER COST

IMPROVED TECHNOLOGY

IMPROVED QUALITY

INCREASED TECHNOLOGY BASE/SYSTEM ALTERNATIVES

MORE EFFICIENT PRODUCTION

REMOVE INEFFICIENT FIRMS

FACILITATION OF HIGH AND STABLE EMPLOYMENT

RELAXATION OF GOVT VIGILANCE/CONTROL

PROMOTION OF FREE ENTERPRISE SYSTEM

INITIAL OBSERVATIONS

- COMPETITION NOT AN ABSOLUTE
 - DIFFERS IN EFFECTIVENESS IN DIFFERENT SITUATIONS
 - DIFFERENT OBJECTIVES IN DIFFERENT SITUATIONS
 - NOT NECESSARILY FAVORED BY INDUSTRY BUYERS AND IN OTHER COUNTRIES
- CONSEQUENTLY COMPETITION RESEARCHERS AND POLICY MAKERS HAVE TO CONSIDER COMPETITION AS AN ACQUISITION TOOL (IN ADDITION TO NATIONAL POLICY)
- AREAS FOR CONSIDERATION
 - COMPETITION OVER THE LIFE CYCLE
 - COMPETITION BEHAVIOR
 - PROGRAM AND MARKET STRUCTURE COMPETITION
 - COMPETITION PLANNING
 - COMPETITION DECISION ANALYSIS
 - COMPETITION POLICY DEVELOPMENT

TYPES OF COMPETITION

<u>LIFE CYCLE</u>	<u>OBJECTIVES OF COMPETITION</u>	<u>POTENTIAL BARRIERS TO COMPETITION</u>	<u>CRITERIA FOR COMPETITIVE DECISION</u>	<u>TECHNIQUES</u>
Alternative concept evaluation	Increase innovation/creativity and develop alternative concepts; Reduce risks	Marketplace	Innovation/creativity gain vs. resources used	Individual R&D contracts on generic problem
Advanced development (competitive validation)	Validate feasible approaches to system and prepare for production competition	Proprietary data Resources Marketplace	Innovation/creativity gain & preparation for production competition vs. resources used	Proposal competition; Competitive prototype; Parallel development.
Engineering development (full scale development)	Ensure best approach to system & prepare for production competition	Proprietary data Resources Marketplace	Innovation/creativity gain & preparation for production competition vs. resources used	Competitive prototype; Proposal competition; Teams
Production (low rate, initial, subsequent)	To gain competitive savings and increase the mobilization base	Proprietary data Start up costs Quantity Tech. data pkg. Sources Time etc.	Competitive savings (i.e., price difference) vs. investment, risk on schedule & quality	Straight competition (formal ad) Leader-follower Licensing Generation of competition Form, fit & function

Secondary items

Services

ADP

Other

COMPETITION PLAN

- SYSTEM DESCRIPTION
- COMPETITION STRATEGY
 - COMPETITION IN EACH PHASE OF LIFE
- DETAILED PLAN FOR COMPETITION IN PHASE
 - CONCEPT COMPETITION
- CONDITIONS FOR COMPETITION
- ACTIONS FOR THIS AND SUBSEQUENT COMPETITION
- ANALYSIS OF FEASIBILITY AND DESIRABILITY
- SPECIFIC COMPETITIVE APPROACH
 - ADVANCED DEVELOPMENT (SAME FORMAT)
 - ENGINEERING DEVELOPMENT (SAME FORMAT)
 - PRODUCTION (SAME FORMAT)

COMPETITION DECISION ANALYSIS

- APRO 709 REPORTS, IDA, RAND, LMI, ETC.
- COST SAVINGS
 - LEARNING CURVE SLOPE CHANGE AND SHIFT
 - PRODUCTION RATES
 - QUANTITY
 - LEVEL OF FUNDING
- BARRIERS
 - INVESTMENT
 - FUNDING
 - QUANTITY
 - DATA
 - ETC.
- EFFECT ON
 - INVESTMENT
 - SCHEDULE
 - QUALITY
 - MOBILIZATION BASE
 - POLITICAL FACTORS
 - OTHER

RESEARCH TOPIC

MICRO AND MACRO
COMPETITION

PROGRAM/CONTRACT (MICRO): AFFECTING ONE PROGRAM

LIFE CYCLE PHASE

OBJECTIVES

BARRIERS/ADVANTAGES

TECHNIQUES

BEHAVIOR

MARKET STRUCTURE (MACRO): AFFECTING ONE COMMODITY

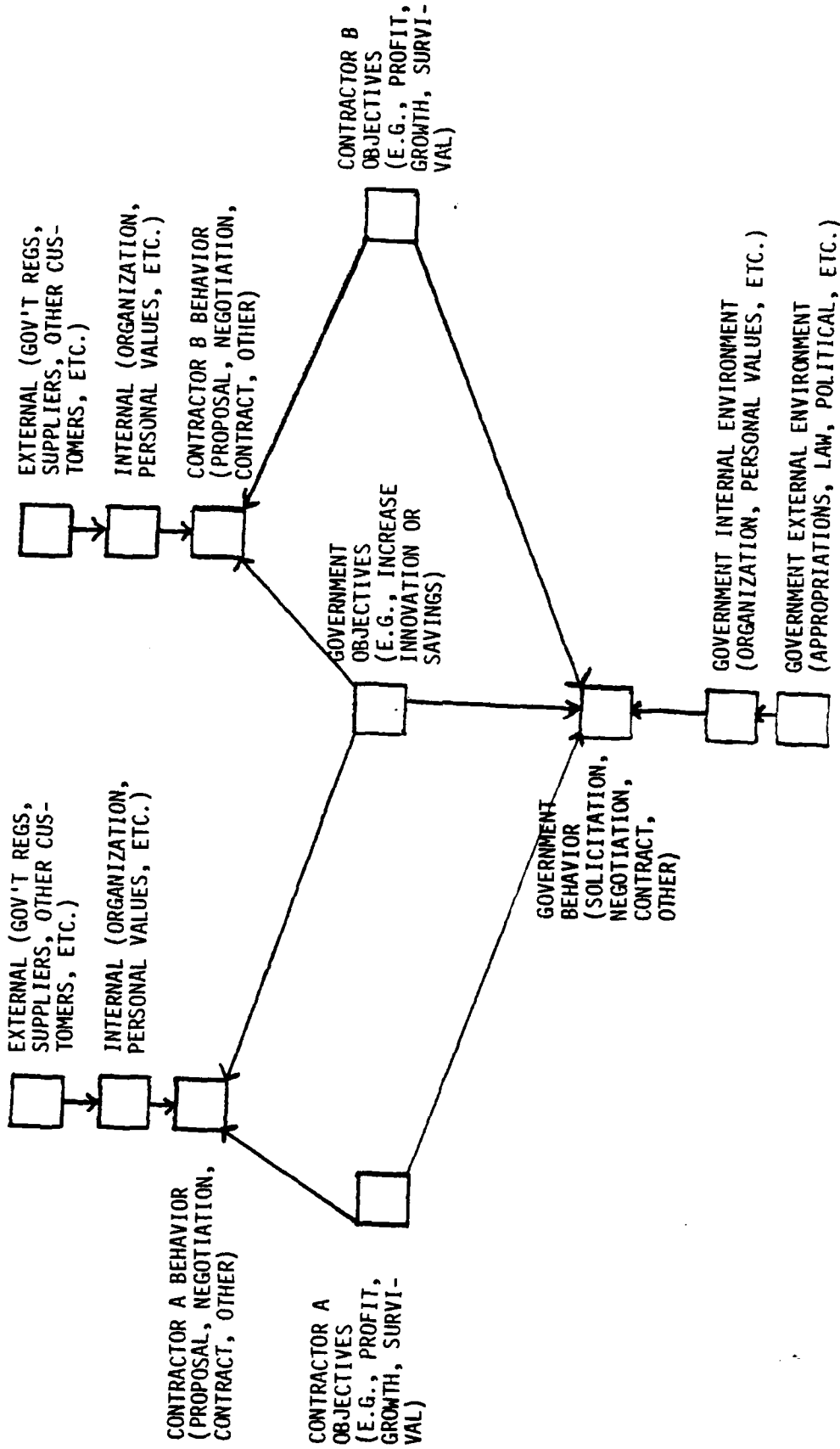
MONOPSONY

CONCENTRATION

GOVT SHARE OF MARKET

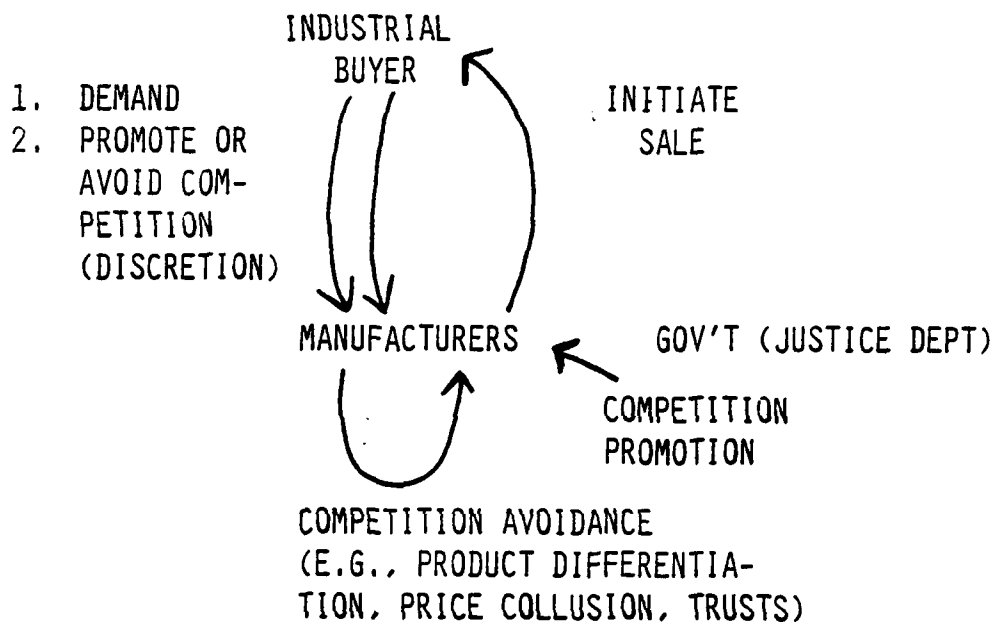
MODEL OF
COMPETITIVE
BEHAVIOR

RESEARCH TOPIC

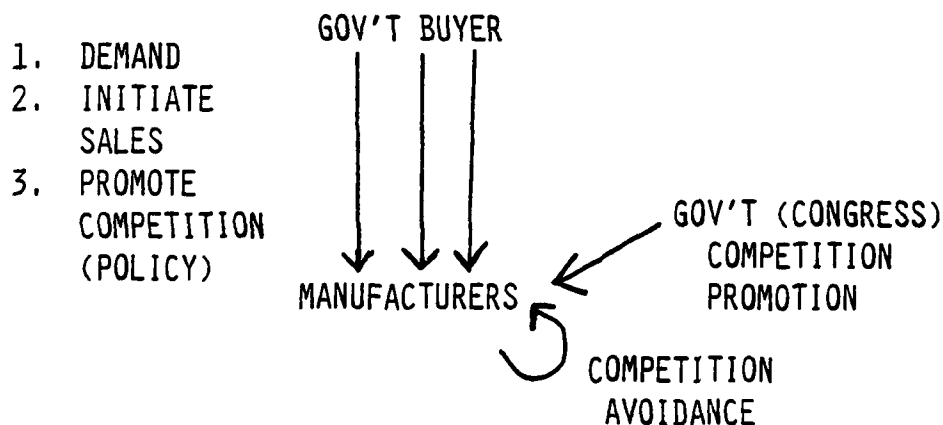


COMPETITION PROMOTION AND AVOIDANCE BY
BUYER AND SELLER AND OTHERS

1. COMPETITION IN THE INDUSTRIAL BUYING PROCESS



2. COMPETITION IN THE GOV'T BUYING PROCESS



ORGANIZATIONAL FACTORS INFLUENCING COMPETITION

PROBLEM

SHOULD HQ IMPOSE THE SAME COMPETITION QUOTAS ON EACH ORGANIZATION UNDER IT? SHOULD THE TARGETS VARY BY THE CHARACTERISTICS OF THE INDIVIDUAL ORGANIZATIONS?

ONE SOLUTION

FIND OUT WHAT ORGANIZATIONAL FACTORS SEEM TO INFLUENCE THE DEGREE OF COMPETITION.

	\$ % Compe- tion	Action % Compe- tion	Complexity Index Av. Sys. Size		Nature of Contractor Number Size		Degree of Centralization (High, med. low)	
Command A								
Div 1								
Div 2								
Command B								
Div 1								
Div 2								
etc.								

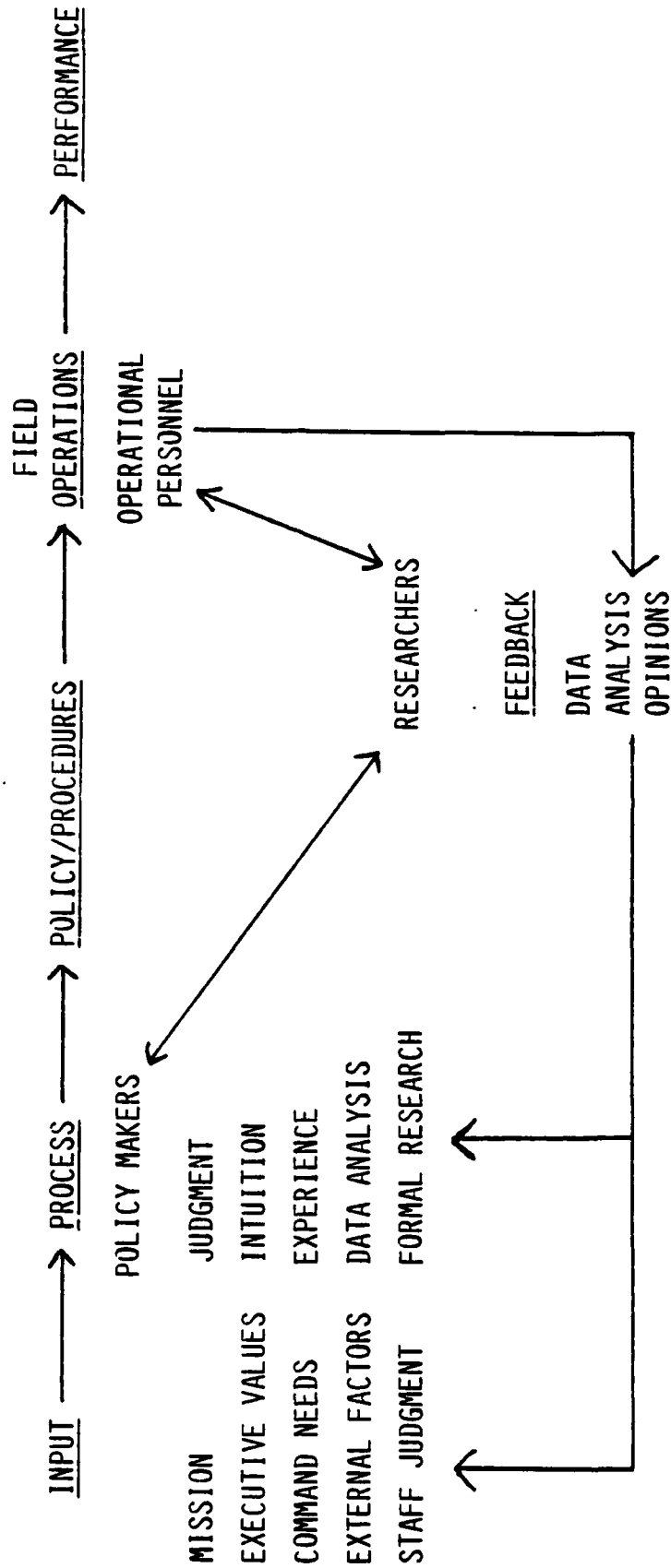
OUTPUT

A RELATIONSHIP DEPICTING RELATIVE FACTOR IMPORTANCE:

- o $COMP \$ = A + B \text{ (COMP INDEX)} + C \text{ (NO. OF KRS)} + \text{ETC.}$
- o ORGS WITH A HIGH DEGREE OF COMPETITION TEND TO HAVE COMMODITIES WITH CHARACTERISTIC X, ORGANIZATION WITH CHARACTERISTIC Y, PERSONNEL WITH CHARACTERISTIC Z, CONTRACTORS WITH CHARACTERISTIC W; ETC.

COMPETITION POLICY DEVELOPMENT: RELATING

OPERATIONS, RESEARCH AND POLICY



I HAVE BEEN ASKED TO INTRODUCE OUR DISCUSSION ON TYPES OF COMPETITION.

I CERTAINLY BELIEVE A DISCUSSION OF COMPETITION IS TIMELY. WE APPEAR TO BE ON THE VERGE OF SEEING A SIGNIFICANT INCREASE IN DEFENSE SPENDING - CERTAINLY IN THE NAVY. THERE IS NO DOUBT THAT THE EXPENDITURE OF THESE ADDITIONAL SUMS IS GOING TO RECEIVE VERY CLOSE SCRUTINY FROM A NUMBER OF QUARTERS. WE WILL HAVE A VIRTUAL MANDATE TO SPEND THESE DOLLARS WISELY. UNFORTUNATELY, THERE IS A TENDENCY FOR MANY TO ALWAYS EQUATE "WISELY" WITH "COMPETITIVELY." I THINK WE ARE ALREADY STARTING TO SEE THE WORD COMPETITION CREEP INTO PRINT MORE FREQUENTLY IN CONNECTION WITH RECENT BUDGET ACTIVITY.

ALTHOUGH WE WOULD PROBABLY ALL AGREE THAT COMPETITION IN GENERAL IS IN FACT GOOD, COMPETITION AS IT PERTAINS TO DEFENSE CONTRACTING, LIKE MANY FACETS OF THE ACQUISITION PROCESS, IS NOT GENERALLY VERY WELL UNDERSTOOD OUTSIDE OF THE ACQUISITION COMMUNITY. THERE IS A STRONG TENDENCY BY THE PUBLIC AT LARGE, THE FOURTH ESTATE AND IN FACT MANY, IF NOT MOST, OF OUR CONGRESSMEN TO EQUATE COMPETITION TO "INVITATION FOR BID" AND "FORMAL ADVERTISING." ANYTHING OTHER THAN FORMAL ADVERTISING IS TREATED AS NONCOMPETITION AND THEREFORE BAD AND AT LEAST TWENTY-FIVE PERCENT MORE EXPENSIVE.

SOME OF THE CONTROVERSY SURROUNDING COMPETITION IS FUELED BY CONGRESSIONAL PARTIALITY TO CONTRACTING BY PUBLIC ADVERTISEMENT.

THEY HAVE GONE ON RECORD CONSISTENTLY AS FAVORING THIS METHOD OF PROCUREMENT -- A TECHNIQUE IN WHICH THE RULES OF THE GAME ARE WELL-KNOWN, AUTOMATICALLY APPLIED, PUBLICLY VERIFIABLE, AND CONDUCIVE TO WIDE BIDDER PARTICIPATION. SINCE THE COMPETITORS IN FORMALLY ADVERTISED ACQUISITIONS ARE PRICE RANKED, AND THE AWARD, GENERALLY GIVEN TO THE LOWEST PRICE -- FORMAL ADVERTISE-
MENT IS AN EASILY UNDERSTOOD PROCESS THAT DOES IN FACT TAKE ADVANTAGE OF COMPETITION. I BELIEVE THIS IDENTIFICATION OF FORMAL ADVERTISING WITH COMPETITION HAS UNFAIRLY STIGMATISED THE USE OF NEGOTIATION EVEN THOUGH NEGOTIATION MAY TAKE ADVANTAGE OF COMPETITION TO THE SAME EXTENT. A NOW 20 YEAR OLD STATEMENT OF ONE OF THE SUBCOMMITTEES OF THE HOUSE ARMED SERVICES COMMITTEE GOES SOMETHING LIKE THIS:

"WE CONDEMN EXCESSIVE USE OF NEGOTIATION. WE CONDEMN IT AS A BREEDING PLACE FOR SUSPICION AND FRAUD. WE CONDEMN IT AS A SHIELD FOR MISCHIEF."

I DON'T BELIEVE THAT VIEW HAS CHANGED MUCH OVER THE PAST 20 YEARS. IN NEGOTIATED ACQUISITIONS, PRICE AND TECHNICAL FACTORS MUST BE SORTED OUT, COMPARED AMONG THE COMPETING OFFERORS, FREQUENTLY CHANGED AS A RESULT OF DISCUSSIONS SHAKEN DOWN INTO A FINAL CONTRACT BETWEEN THE GOVERNMENT AND THE CHOSEN SOURCE. THE PROBLEM IS THAT THE FINAL DECISION IS NOT ALWAYS UNDERSTOOD OR EASILY EXPLAINABLE TO THOSE NOT INVOLVED IN THE EVALUATION PROCESS. CONSEQUENTLY, PEOPLE THAT VIEW THE NEGOTIATION PROCESS FROM OUTSIDE -- EVEN IF THEY RECOGNIZE THAT IT IS OFTEN COMPETITIVE -- ARE SUSPICIOUS -- THEY ARE SKEPTICAL OF OUR ABILITY TO RENDER SOUND IMPARTIAL JUDGMENTS.

OUR APPROACH TO COMPETITION OF COURSE WILL VARY DEPENDING ON THE COMMODITY SOUGHT AND THE TYPE OF CONTRACT CHOSEN TO ACQUIRE THE COMMODITY. AS NOTED EARLIER, IN FORMALLY ADVERTISED ACQUISITIONS, COMPETITION IS DEMONSTRATED BY PRICE RANKING, AFTER DETERMINING THAT WHAT THE GOVERNMENT WANTS IS BEING OFFERED, AND AWARD IS MADE TO THE LOWEST PRICED CONTRACTOR.

IN NEGOTIATED FIXED PRICE COMPETITIONS, WE USUALLY DO NOT RELY ON THE PRICES INITIALLY SUBMITTED BY COMPETITORS. THE COMPARABILITY BETWEEN INITIAL OFFERS GENERALLY IS INSUFFICIENT TO JUDGE THE RELATIVE MERITS ON THE BASIS OF PRICE. DISCUSSIONS WITH OFFERORS RESULT IN ENTERING INTO A FIXED PRICE CONTRACT BASED ON FACTORS OTHER THAN PRICE. HOWEVER, PRICE GENERALLY WEIGHS HEAVILY IN THE GOVERNMENT'S FINAL DECISION.

IN COMPETITIVE NEGOTIATIONS INVOLVING COST-TYPE CONTRACTS, OFFERORS SUBMIT ESTIMATES RATHER THAN FIXED PRICES. THE FACT THAT A COST TYPE APPROACH IS CONTEMPLATED INDICATES THE PRIMARY INTEREST OF THE GOVERNMENT IS FOCUSED ON RELATIVE TECHNICAL COMPETENCE RATHER THAN PRICE. THIS DISTINCTION FORMS THE BASIS OF THE TWO MAJOR TYPES OF COMPETITION AVAILABLE TO THE GOVERNMENT -- PRICE AND TECHNICAL.

PRICE COMPETITION IS USED IN A WIDE VARIETY OF SITUATIONS. IT CAN BE SIMPLY THE PRICE OF THE "INSTANT" CONTRACT -- THAT WOULD CERTAINLY BE TRUE OF A FORMALLY ADVERTISED REQUIREMENT. A MORE SUBJECTIVE TYPE OF "PRICE" COMPETITION INVOLVES THE EVALUATION OF PROPOSALS ON A "LIFE CYCLE COST" BASIS. ANY COMPETITION

WILL INVOLVE BOTH PRICE AND TECHNICAL AT LEAST TO SOME EXTENT. OTHER FACTORS ALSO ENTER INTO MOST COMPETITIONS -- MANAGEMENT, PAST PERFORMANCE, ETC.

OMB CIRCULAR A-109 DICTATES MAKING THE MAXIMUM USE OF COMPETITION AT EACH PHASE OF THE DEVELOPMENT OF A NEW WEAPON SYSTEM WHERE ECONOMICALLY JUSTIFIED. THE USE OF PARALLEL DEVELOPMENT CONTRACTS AWARDED TO COMPETING CONTRACTORS WITH EVENTUAL SELECTIONS TO NARROW DOWN THE FIELD AS THE PROGRAM MATURES IS A FORM OF TECHNICAL COMPETITION LEADING TO PRICE COMPETITION DURING PRODUCTION. UNDER A-109 THE TYPE OF COMPETITION WILL VARY WITH THE ACQUISITION PHASE.

<u>TYPE OF COMPETITION</u>	<u>A-109 ACQUISITION PHASE</u>
SYSTEM CONCEPTUAL DESIGN COMPETITION	EXPLORATION OF ALTERNATIVE SYSTEMS
PRELIMINARY DESIGN COMPETITION	COMPETITION DEMONSTRATIONS
ENGINEERING DESIGN COMPETITION	FULL SCALE DEVELOPMENT & T&E
PRODUCTION PRICE COMPETITION	PRODUCTION

THE FIRST THREE PHASES ARE PRIMARILY TECHNICAL COMPETITIONS WHERE EVALUATION FACTORS WOULD CONCENTRATE ON INNOVATIVE CONCEPTS, MAIN DESIGN FEATURES AND EVENTUALLY QUALITATIVE FEATURES. THE FOURTH WOULD BE MOSTLY PRICE COMPETITION WHERE THE MAIN DIFFERENCE IN ALTERNATIVE OFFERS IS COST TO PRODUCE AND HOPEFULLY LIFE CYCLE COST. IN GENERAL, THERE IS LESS EMPHASIS ON COMPETITION IN A-109 AS YOU MOVE TOWARD PRODUCTION.

THERE IS ANOTHER TYPE OF COMPETITION I WOULD LIKE TO MENTION -- IT'S CALLED "FOLLOW-ON AFTER INITIAL PRICE OR TECHNICAL COMPETITION."

AT THE NAVAL ELECTRONIC SYSTEMS COMMAND ABOUT 25% OF THE DOLLARS I OBLIGATE ARE INITIAL COMPETITION. I DO ANOTHER 40% OR SO THAT IS FOLLOW-ON AFTER AN INITIAL COMPETITION. THOSE FOLLOW-ON AWARDS MAKE JUST AS MUCH BUSINESS SENSE AS THE INITIAL COMPETITION -- BUT OUR SYSTEM DOESN'T GIVE ME MUCH CREDIT FOR THEM. FRANKLY, I HAVE TROUBLE DISCERNING ANY REAL DIFFERENCE BETWEEN A COMPETITIVE DEVELOPMENT THAT ENDS WITH A FIVE YEAR MULTI-YEAR PRODUCTION CONTRACT AND A SIMILAR DEVELOPMENT THAT RESULTS IN A SERIES OF SINGLE YEAR PRODUCTION CONTRACTS . . . YET EACH YEAR OF THE MULTI-YEAR IS RECORDED AS INITIAL COMPETITION WHILE THE SINGLE YEAR CONTRACTS ARE LABELED AS FOLLOW-ON. ALTHOUGH WE DUTIFULLY REPORT OUR "FOLLOW-ON" AFTER INITIAL COMPETITION FIGURES TO THE OSD DATA BASE -- WE NEVER SEEM TO GET ANY REAL CREDIT FOR THIS CATEGORY OF COMPETITION.

TO SUMMARIZE -- IN GENERAL COMPETITION IS BASICALLY PRICE OR TECHNICAL -- WITH THE EMPHASIS ON TECHNICAL EARLY IN A PROGRAM LIFE AND A SHIFT TO PRICE AS YOU APPROACH THE PRODUCTION PHASE. FOLLOW-ON SOLE SOURCE CONTRACTS THAT OCCUR AFTER AN INITIAL COMPETITION ARE AN EXAMPLE OF AN AREA THAT NEEDS EMPHASIS. PERHAPS ITS TIME TO EXAMINE OUR REGULATIONS ON HOW WE CATEGORIZE AND DEFINE COMPETITION TO SEE IF WE CAN DO A BETTER JOB OF REPORTING AND TAKING CREDIT FOR THE COMPETITION THAT DOES OCCUR IN OUR ACQUISITIONS.

ONE THING THAT WE COULD DO COLLECTIVELY IS TO SIMPLY DO A BETTER JOB EXPLAINING JUST WHAT WE MEAN BY COMPETITION -- THAT IT CAN OCCUR OUTSIDE OF THE FORMAL ADVERTISING PROCESS, THAT IT MAY BE ON PRICE OR TECHNICAL MERIT, AND THAT IT ISN'T ALWAYS PRACTICABLE.

My topic is Competition Strategies - You've heard about types of competition.

It is the law and policy of the United States Government to seek maximum competition in its acquisitions. Thus, we are obligated to begin from the premise that competition will take place in all cases unless it falls within a statutory exception. It is also the obligation of Government purchasing agencies to take "steps to foster competitive conditions for subsequent procurements..." (DAR 3-101(d)). Moreover, the Comptroller General has consistently held that the sure way to test the effectiveness of competition is to issue the IFB or RFP and see who bids.

Studies generally have concluded that competition is a good thing and more competition would be better yet. But how--considering reality. For more than 20 years, the DOD has attempted in various ways to increase the role of competition in the weapons acquisition process. That's the purpose of this workshop to examine the "how of competition." Competition Strategy!

OFPP joined with OMB Circular A-109 which advocates "Competitive exploration of alternative system design concepts." Competition later in the acquisition cycle is also mentioned, and is advocated "whenever economically beneficial."

Competition, although a mundane business subject within the glory of technical innovation--pushing the frontiers of technology, is an important topic within Air Force Systems Command. And it is easier to do early in the acquisition cycle. If you haven't planned for it as a part of the production decision (which follows) it will be extremely difficult to do. Competition leads to technology advances, lower prices, and better quality. Having said this, it would seem all of our contracts should be competed. However, as a practical matter, this is not practical, especially in our weapon system contracts. Once a contractor has devoted several years and the Government spent many millions of dollars for the design, development and production of a weapon system, it is time consuming and expensive (and may even be disastrous) to interject competition - a new source, untried and unproven. Therefore, in the process of planning for effective competition of a major acquisition hardware or services, we must consider complex questions that rarely lend themselves to simple yes or no answers. But planning must start early whatever the strategy to be used. The factors that require consideration are often difficult to sort out and frequently point to the validity of contradictory conclusions. The purpose of this workshop is to examine some of these factors in terms of demonstrating whether or not competition is likely to be effective or bring about a clear and predictable benefit.

We have learned over the years, continuing with the developer after an initial competition is a conservative and usual, not an unusual, approach. A contractor we are comfortable with is the norm for a number of very valid reasons. Reporting wise, these are called "Follow-on to competition." Is our reporting properly defined?

Several types of competition that may be employed when acquiring weapon systems:

- Concept Formulation
- Demonstration and Validation Phase

- Full-Scale Development Phase, Competition
- For Production

As a system moves through the acquisition cycle, the application of competition changes in two major ways: The benefits sought from competition change, as does the perceived ratio of costs incurred to benefits obtained - the A-109 "when economically beneficial." Thus an analysis of the role of competition in weapon system acquisition must examine individually at least these four distinct acquisition phases and plan for implementing competition in a particular phase from the beginning of the requirement.

Competition strategy covers use of the following approaches in a planned systematic application.

- Normal competitive solicitation on basis of price or technical competition using a technical data package.
 - Major Systems
 - Production
 - Subsystem/components
- Competitive parallel development and a competitive fly-off
- Developing or extending a second source (e.g., The loser from competitive parallel development).
 - Leader/follower
 - Teaming
 - Breakout of components
 - Direct licensing
 - Form, fit and function
 - Educational buy
- Multiyear as a part of the competitive strategy

An area that has proved successful is parallel development and competitive fly-off. This approach was used for the B-52 weapon system trainer. Two contractors (Boeing and Singer) were competitively selected to design and build a B-52 weapon system trainer and then demonstrate the system. After the demonstration, a selection was made between the two for the production effort. Singer Company won the competition and was awarded the production contract in April 1980. Again, we feel this resulted in a better price plus a better design. Over the years, this will provide the Air Force a very cost effective system, savings in flying hours on the B-52 and savings in fuel. Effective competition occurs when you can:

- Keep two contractors in the program until the design is set and all decisions about the production schedule have been made.
- Help to set the design while competitive pressure still could be focused on the contractors, thus encouraging their best design efforts.

Too often the competition ends before the risks are resolved and the production contracts are fully set, with major design changes (and their associated cost increases) still to be expected. The price benefits expected from the competition may thus be lost.

BOTTOM LINE

No additional management incentive is needed to encourage active competition during the concept formulation and the demonstration and validation phases of a new weapon system. Managers seem quite willing to employ competition among firms prior to the beginning of full-scale development, but managers generally are reluctant to establish competition during production. Consider price competition during the production phase! The problems and disincentives loom relatively large and the introduction of competition may significantly complicate program management tasks in a variety of ways.

Competition in the production phase is usually viewed as a means of reducing cost to the buyer, although other benefits (e.g. broaden the base) are possible and sometimes sought. The introduction of competition into an on-going production program appears risky to most program managers and where there is no offsetting benefit, it is not usually done. On complex systems involving expensive tooling or facilities, the benefits cannot offset this cost.

Although it is difficult to break away from the original producer, there have been a few times that we have interjected competition. There were two recent fuze programs that were competed after the first low rate initial production contracts. Although in both cases the same contractor that developed the fuze and had the low rate initial production, won the competition, we realized a considerable cost savings because of the competition. We have also learned that it is dangerous to compete a system right after development. There are just too many problems that develop during the first production run. This is why we came up with low-rate initial production. This allows us to work out the production problems during a low rate production before all of the production tooling has been bought. It also allows a small number of units to go to the operation units. This approach can generally be used only for those items where there is a large outyear production run and the tooling does not represent too large of an investment.

REPROCUREMENT DATA Technical Data Package (TDP)

The TDP is defined as a technical description of an item adequate for use in procurement. This description defines the required design configuration and assures adequacy of item performance. TDP is predominantly a design description which has evolved out of the R&D cycle and is intended for use in the production of the item. A qualified second source should be able to use the TDP in manufacturing an almost identical copy of the item made by the developer.

A validated data package is essential. We have more problems over this than any other factor. The TDP must accurately describe a system or component which can be produced.

CONTRACTOR TEAM ARRANGEMENTS

Contractor team arrangements are described in Section 4-117 of the DAR. A contractor team is an arrangement (1) where two or more companies form a partnership or joint venture to act as a potential prime contractor or (2) where a potential prime contractor agrees with one or more other companies to act as his subcontractor(s) under a specific Government acquisition. Teaming is considered appropriate for major systems contracts for the purpose of providing multiple sources and later production competition. This has some advantages.

- a. Problems in later qualifying second sources are reduced since at least two contractors are involved in (some portion) design and initial production.
- b. The design and development talents of at least two firms will address a technical problem which increases the opportunity for successful and innovative designs.

LEADER/FOLLOWER (L/F)

The Leader/Follower (L/F) method is an acquisition technique under which the developer or other producer of an item or system (the leader company) furnishes manufacturing assistance and know-how or otherwise enables a follower company to become a source of supply for the item or system (DAR 4-701). There are two primary reasons for creating second sources to produce military hardware--broadening the industrial base and achievement of cost savings. Three procedures (on viewgraph) are available for implementing the L/F technique (DAR 4-703).

- a. Award of a prime contract for supplies to an established source (leader) who is obligated to subcontract a part of the quantity to a specified or competitively selected subcontractor (follower).
- b. Award of a prime contract for a part of the total requirements for supplies to the leader company. In turn, the prime contract also obligates the leader company to provide technical assistance to the follower who has a direct contract with the Government for the remaining portion of the total requirements.
- c. Award of a prime contract for the total quantity of supplies to the follower company. The prime contract obligates the follower company to subcontract for technical assistance with the leader company.

COMPONENT BREAKOUT

Component breakout is the process of dividing an end item into its component parts so that the components may be bought directly from a manufacturer rather than from the end item prime contractor. The term "component" includes subsystems, assemblies, subassemblies and repair parts. Breakout can take place in two ways.

- a. The competitive purchase of an item which was previously purchased noncompetitively from the prime contractor.

b. The direct noncompetitive purchase from the item manufacturer or vendor following previous purchases of the same item from the prime contractor.

DIRECTED LICENSING

Directed licensing method consists of the use of a special provision (1) as part of a contract between the Government and developer or sole producer of an item or system, or (2) as a separate agreement between the developer or sole producer and another potential producer whereby the developer or sole producer agrees to grant authoritative permission to another source for the production of the item or system. The developer would agree to provide a data package and such technical assistance as may be required to get the new contractor into production. The development contractor would be compensated for his efforts by fees and royalties agreed upon at the time of initial commitment. Licensing opportunities are more apparent at the subsystem or component level.

FORM, FIT AND FUNCTION "Chinese Copy" or Reverse Engineering

Risks are inherent in using an unproven TDP for the first time in production. The form, fit and function (F3) method is the description of military equipment by performance characteristics. The equipment described in terms of output, function and operation. It is best used at the subsystem or component level. Advantages are:

- a. Increased competition can be expected. A variety of technical approaches may result in a product giving the desired function.
- b. The responsibility for meeting performance is placed squarely upon the contractor.

The overriding disadvantage of the F3 description relates to logistic implications. The likelihood is that, over time, a number of different items will be purchased, all of which conforms to the functional description. Standardization and interchangeability will be adversely affected. May take time and dollars to duplicate and do qualification testing.

EDUCATIONAL BUY

An educational buy is a contract to provide a firm the opportunity to learn how to manufacture limited production quantities of equipment in accordance with a Government TDP. The purpose of the method is to generate a competitive second source for an item. The second source contractor is usually selected as a result of competition, although the source can be directed by the Government. Its use may be limited, e.g., it may not be feasible to use the method by itself for second sourcing complex items. Pros and cons are as follows:

- The educational buy can be a good method of enhancing competition.
- The use of the method to develop a second source is time-consuming and may be expensive due to such things as First Article Qualification Testing, etc.

I would like to take the next few minutes to cover a few other areas where we are competing at the systems level. The first is second sourcing. We currently have two contractors producing 30mm ammunition for the GAU-8/A gun system used in the A-10 aircraft. General Electric builds the gun and was responsible for the ammunition. They competed the ammunition between Aerojet and Honeywell. In FY 1977, we broke the ammunition away from the gun and contracted directly with Aerojet and Honeywell. Since then, we compete each year the relative percentages of the total buy. Anytime the need for keeping two contractors producing 30mm ammunition goes away, we are in a position to compete all or some portion of the remaining production.

MULTIYEAR CONTRACTING

While competition does provide benefits, competing a one year production effort is not that beneficial. Multiyear contracting (DAR 1-322) is a method of acquiring DOD planned requirements for up to a five-year period without having funds available for the total program quantity at time of award. It was not specifically established to promote competition. But it must be emphasized that the method has an especially salutary effect on competition. The high volume production over a long production cycle offered by the multiyear method is a very real inducement to potential defense contractors. Systems Command is pushing legislation to relax the rules on multiyear contracting. If the rules are relaxed, we hope to compete several hardware efforts on a multiyear basis thereby increasing the benefits of competition. We recently competed an award for six electronic systems over a three year period where six bids were received. We estimated the savings of awarding the contract on a multiyear basis versus a single year basis to be about six percent. We feel that when the rules are relaxed, we will have more flexibility and can realize greater savings.

MAJOR O&M "SERVICES" COMPETITION

So far, I have talked about hardware. Another area that is difficult to compete is the operation and maintenance of Government Test/Operational facilities. Under such things as the Service Contract Act (SCA), specified minimum manning or skills mix, we must consider - what's left to compete? Once a contractor has established himself as a good performer, both the contractor and Government personnel become comfortable with each other, it's hard to change. This is especially true if the facility has diverse functions and is complex. It may be difficult to find other contractors that have all of the required skills to operate such a facility. At the Arnold Engineering Development Center in Tennessee we faced this problem and decided to break the effort into three smaller areas of effort. Offerors could bid on one, two or all of the efforts. As it turned out we now have three separate contractors doing the O&M at Arnold. While this may have created more interfaces, it did interject competition and we feel, resulted in three very good and cost effective contracts.

In summary, competition has a potential to produce many significant benefits, such as:

- Improved product quality.
- Lower unit costs.

- Faster rates of learning by the manufacturer.
- Technology process.
- Industrial productivity.
- Enlarged industrial base for surge and mobilization.
- Equitable process in awarding the contract.

Yet it is not enough simply to have faith that the competitive process will lower prices by some amount. A credible forecast of that amount is needed in order to judge whether gross savings are likely to be sufficiently greater than the costs of opening additional sources of supply to justify both the costs and the risks (of performance problems and delayed delivery) associated with competitive reprocurement. Savings uncertainty is a critical element. I hope later speakers can show us a better way to determine and prove savings. Realized savings (or losses) on past competitive reprocurements cannot really be measured, too many variables. Also, expected benefits (to be achieved several years hence) on prospective competitive reprocurements cannot be estimated with any confidence for the same reasons. Nevertheless, although the benefits are not easily measured, most managers are comfortable with this process and are convinced that such competition produces a "better" product because it encourages each competitor to use his best people and to work very hard.

Whether competition is likely to be implemented to a greater extent depends, in part, upon how closely the anticipated benefits correlate with the fundamental objectives and perceptions of the acquisition managers. For example, does competition help a system to be deployed faster, minimize technical risks, develop a wider political base, ease financial and administrative problems, or speed the advance of technology? If so, the non-quantifiable savings make the difference.

There are many disincentives and rationalization but it is the law of the land. As professionals we must:

- Comply with the law.
- Avoid past mistakes - excessive leverage/destructive competition.
- Emphasize technical risk and support considerations.
- Balance technical and business considerations.
- Plan early, in order to compete effectively.

BARRIERS TO COMPETITION

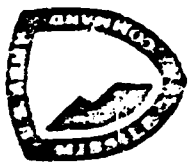
- . Three types of barriers
 - .. Factual
 - .. Self imposed
 - .. Psychological
- . All three are real barriers, all three have the same result - a non-competitive procurement.
- . All three interact. A psychological barrier will manifest its self as a factual barrier.
- . Some barriers lessen the degree of competition, other eliminate it altogether.
- . Factual barriers include:
 - 1. Patent rights, copyrights, secret processes.
 - 2. Control of basic raw materials
 - 3. Unique, elaborate special tooling or equipment.
 - 4. High start - up costs.
 - 5. Inadequate production quantities.
 - 6. The economic climate.
 - 7. Inadequate TDP.
 - 8. Critical delivery schedule.
 - 9. Predominant experts.
 - 10. Exclusive prior experience.
- . Self imposed barriers include:
 - 1. 8(a) program.
 - 2. Buy Indian act.
 - 3. Small business set - asides.
- . Psychological barriers
 - 1. Lack of control over program.
 - 2. Lack of staff to handle one contractor so how can I handle two.
 - 3. The path of least resistance.
 - 4. Competition requires a front end investment in time and money without any demonstratable advantages.
 - 5. He's the best man for the job.
- . Conclusion - future not bright for increasing competition.
 - .. Civil Agencies having budgets cut - funds for competition will be one of the first to go.
 - .. DOD under pressure to increase readiness - to meet shorter IOC dates cut out time for competition.
 - .. To increase competition we must be able to show short term and long run advantages.



MLRS SECOND SOURCE ROCKET PROCUREMENT STUDY

JOHN P. DALY
SYSTEMS ANALYSIS OFC
US ARMY MISSILE COMMAND
REDSTONE ARSENAL, AL

5. *John Daly, US Army*

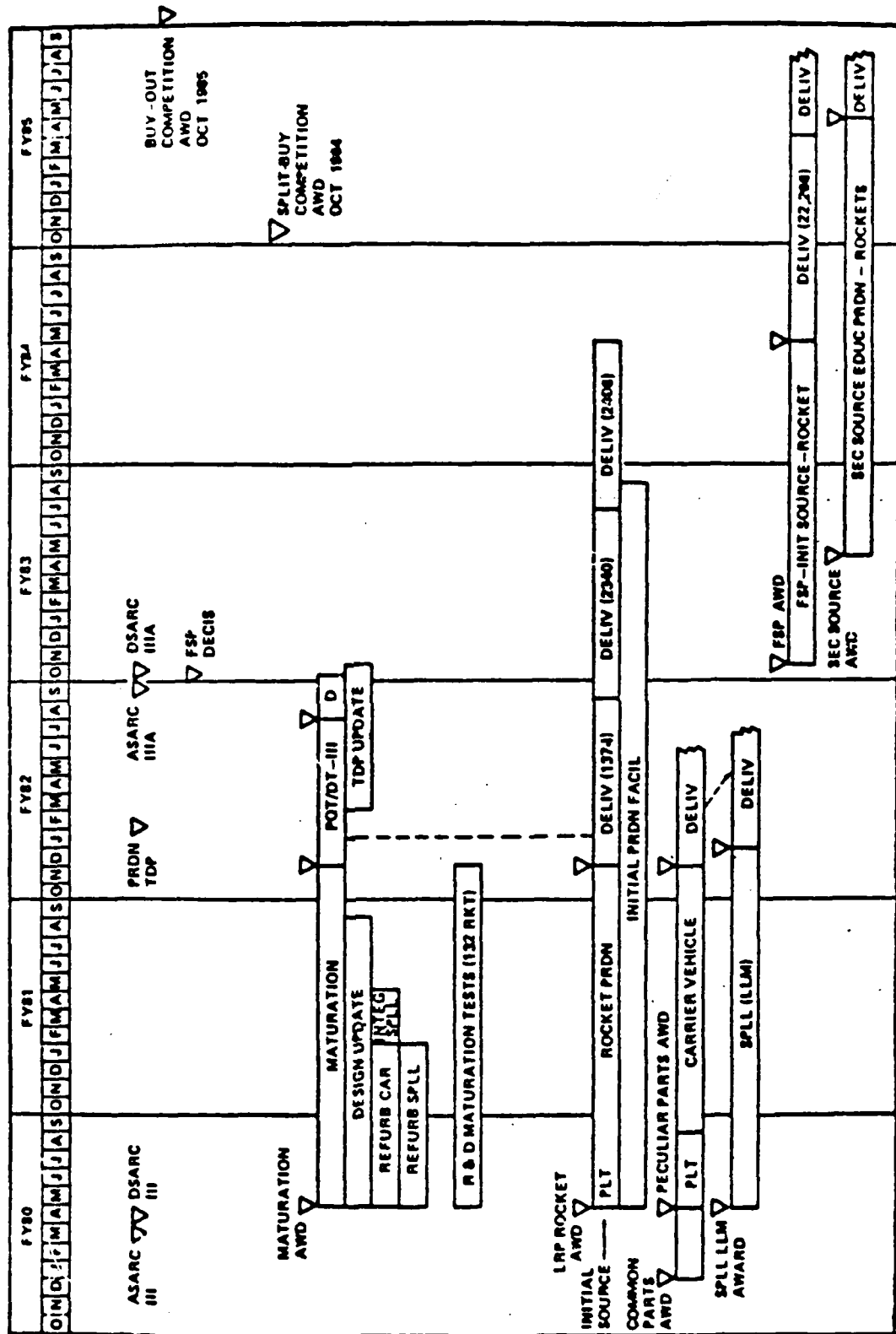


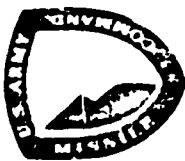
PURPOSE

**TO EXAMINE ALTERNATIVE SECOND SOURCE
ROCKET PROCUREMENT STRATEGIES TO
IDENTIFY THAT WHICH MEETS PROGRAM
OBJECTIVES AT LOWEST COST**



MLRS MATURATION/PRODUCTION MASTER SCHEDULE BASELINE PROGRAM





ACQUISITION OPTIONS

- **SOLE SOURCE**
- **TDP COPY**
 - COMPETE AFTER PRODUCTION TDP AVAIL ("TDP--TRADITIONAL")
 - COMPETE SOON AS POSSIBLE ("TDP--LEADER/FOLLOWER")
- **FREEDOM OF DESIGN (FORM/FIT/FUNCTION)**
 - DESIGNATED TO BOEING ("FOD--DESIGNATED")
 - COMPETITIVE ("FOD--COMPETITIVE")



ISSUES

- PROGRAM AND CONTRACTUAL
- TECHNICAL AND OPERATIONAL
- ECONOMIC

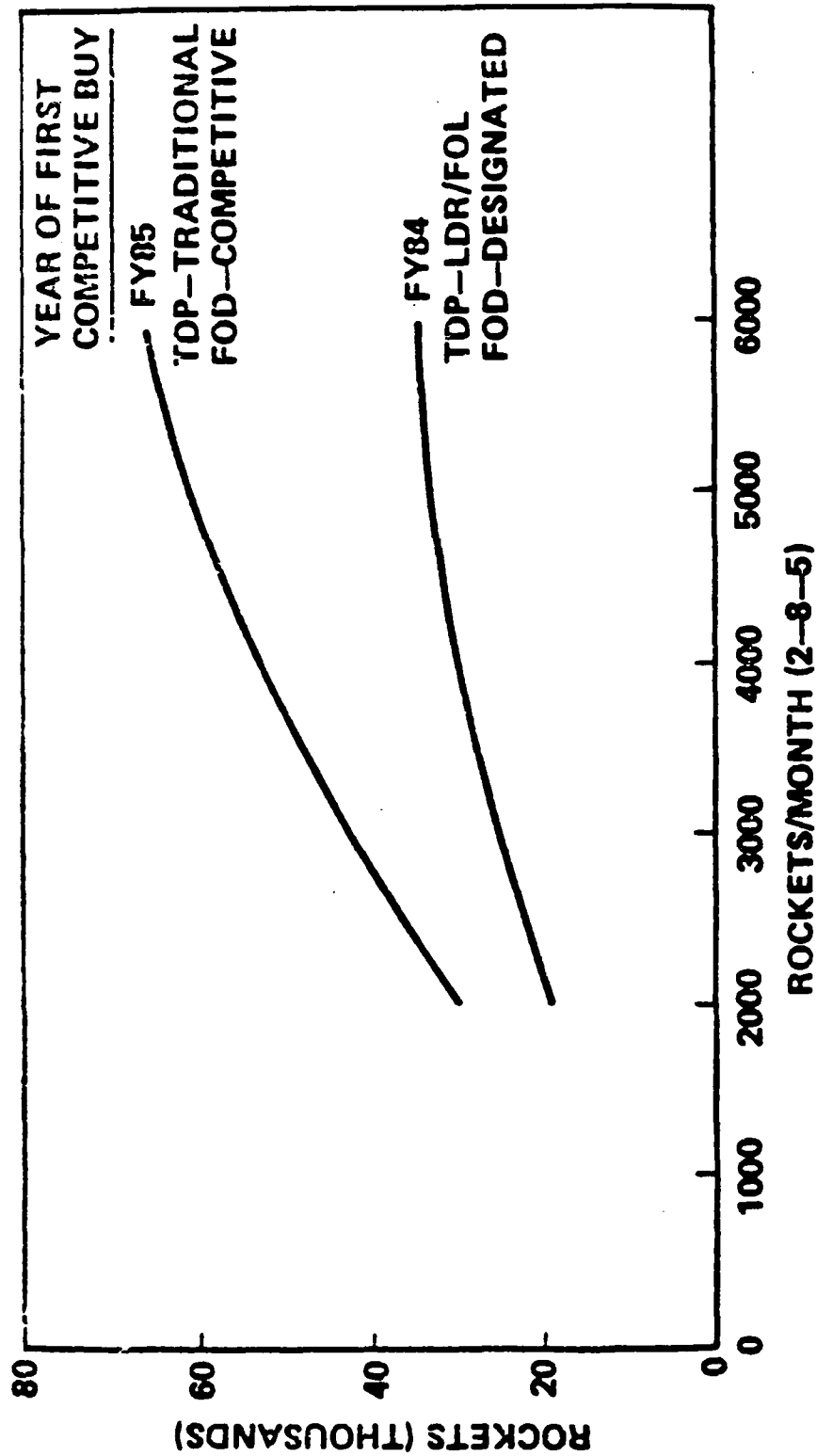


APPLICABLE MICOM ACQUISITION POLICIES

- COMPETITION FOR PRODUCTION WILL NOT OCCUR PRIOR TO GOVERNMENT ASSUMPTION OF FORMAL CONFIGURATION CONTROL
- THE GOVERNMENT WILL ASSUME CONFIGURATION CONTROL AFTER THE TDP HAS BEEN PROVEN IN PRODUCTION, OR PRODUCIBILITY OF HARDWARE TO THE TDP HAS BEEN FULLY DEMONSTRATED DURING ENGINEERING DEVELOPMENT
- THE SYSTEM DEVELOPER OR "PRIME" CONTRACTOR MUST MAINTAIN SYSTEM RESPONSIBILITY THROUGHOUT THE LIFE OF THE SYSTEM. BREAKOUT DECISIONS WILL SO RECOGNIZE.



ROCKETS PROCURED BEFORE FIRST COMPETITIVE BUY





PRIME CONTRACTOR COOPERATION REQUIRED

- TDP--TRADITIONAL
 - ASSIST SECOND SOURCE IF PROBLEMS DEVELOP IN BUILDING TO TDP
 - PROVIDE ALGORITHM ADJUSTMENT FOR MINOR BALLISTICS VARIATION (IF REQ'D)
- TDP--LEADER/FOLLOWER
 - SELECT SECOND SOURCE WITH GOV'T CONCURRENCE
 - TRANSFER PRELIMINARY TDP TO SECOND SOURCE
 - PROVIDE ALL ENGINEERING CHANGES TO SECOND SOURCE
 - TRANSFER MANUFACTURING KNOW-HOW TO SECOND SOURCE
 - WARRANTY SECOND SOURCE HARDWARE
 - PROVIDE ALGORITHM ADJUSTMENT FOR MINOR BALLISTICS VARIATION (IF REQ'D)
- FREEDOM OF DESIGN OPTIONS
 - PROVIDE INTERFACE CONTROL DRAWINGS/SPECIFICATIONS TO SECOND SOURCE
 - ASSIST SECOND SOURCE IN DEVELOPING NEW BALLISTIC ALGORITHM/FCS CHANGES



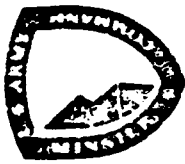
CONCLUSIONS – PROGRAM AND CONTRACTUAL ANALYSIS

<u>ISSUE</u>	<u>PREFERRED COMPETITIVE OPTION</u>
ACQUISITION POLICY	TDP – TRADITIONAL
MOU IMPACTS	TDP – TRADITIONAL
CONFIGURATION MGT/CONTROL	TDP OPTIONS
PRIME CONTRACTOR IMPACTS	TDP – TRADITIONAL, HIGH RATES
WARRANTY	TDP OPTIONS
INDUSTRIAL BASE EXPANSION	ANY, WITH SPLIT BUYS
	DOMINANCE – TDP – TRADITIONAL, HIGH RATE



CONCLUSIONS – TECHNICAL AND OPERATIONAL ANALYSIS

<u>ISSUE</u>		<u>PREFERRED COMPETITIVE OPTION</u>
TECHNICAL RISK		TDP OPTIONS
IMPACTS ON FCS SOFTWARE		TDP OPTIONS
IMPACTS ON LOGISTICS		TDP OPTIONS
IMPACTS ON OPERATIONS/TRAINING		TDP OPTIONS
TDP VALIDATION/TECHNOLOGY TRANSFER		TDP-LEADER/FOLLOWER
OPERATIONAL DEPLOYMENT RATE		ANY WITH HIGH RATE
DOMINANCE – TDP LDR/FOL, HIGH RATE		



CONCLUSIONS – ECONOMIC ANALYSIS

<u>ISSUE</u>	<u>PREFERRED ACQUISITION STRATEGY</u>
• OPT STRATEGY FOR 190K	SOLE SOURCE, 6000/MO
• OPT STRATEGY FOR 360K	TDP–LEADER/FOLLOWER 6000/MO (LO/HI)
DOMINANCE – FOR LOW QTY, SOLE SOURCE, HIGH RATE	
– FOR HIGH QTY, TDP LDR/FOL, HIGH RATE (LO/HI)	



DOMINANT COMPETITIVE STRATEGIES

50

ISSUE

PROGRAM AND CONTRACTUAL

TECHNICAL AND OPERATIONAL

ECONOMIC

PREFERRED STRATEGY

TDP-TRADITIONAL, HIGH RATE

TDP-LDR/FOL, HIGH RATE

LOW QTY: NONE (SOLE SOURCE, HIGH RATE)
HIGH QTY: TDP-LDR/FOL, HIGH RATE (LO/HI)



CONCLUSIONS

- IF THE PLANNED PROCUREMENT IS REDUCED TO 190,000 ROCKETS, A SECOND SOURCE IS NOT ECONOMICALLY JUSTIFIED
- FOR PLANNED PROCUREMENTS IN EXCESS OF 300-400K ROCKETS, A TDP SECOND SOURCE IS PREFERRED
 - TDP-LEADER/FOLLOWER MINIMIZES COST AND TECH TRANSFER PROB
 - TDP-TRADITIONAL MINIMIZES MOU AND PRIME CONTRACTOR IMPACTS
- IN GENERAL, HIGH PRODUCTION RATES MINIMIZE TOTAL COSTS
- LO/HI RATE OPTIONS CAN SAVE \$15M - \$30M BUT DELAY ROCKET FIELDING BY 6 - 12 MONTHS



STUDY GROUP RECOMMENDATIONS

- DO NOT BRING IN SECOND SOURCE UNLESS PROJECTED TOTAL PROCUREMENT EXCEEDS ABOUT 300,000 ROCKETS
- IF PROJECTED PROCUREMENT JUSTIFIES SECOND SOURCE, RECOMMEND:
 - TDP-TRADITIONAL APPROACH
 - PROCUREMENT AT 6000/MO
- FUTURE STUDIES SHOULD ADDRESS POTENTIAL SAVING DUE TO MULTI-YEAR PROCUREMENT FOR SELECTED STRATEGY

APRO REPORTS ON
PRODUCTION COMPETITION

COMPLETED

- APRO 709-3, DETERMINING AND FORECASTING SAVINGS FROM COMPETING PREVIOUSLY
SOLE SOURCE/NONCOMPETITIVE CONTRACTS OCT 78
- APRO 928 (SPECIAL REPORT), AN ANALYSIS OF ACQUISITION ALTERNATIVES FOR
THE US ARMY'S GENERAL SUPPORT ROCKET SYSTEM AUG 79
- APRO 807, FORECASTING SAVINGS FROM REPETITIVE COMPETITION WITH MULTIPLE
AWARDS NOV 79
- APRO P-5, SOLE SOURCE AND COMPETITIVE PRICE TRENDS IN SPARE PARTS
ACQUISITION JAN 81

IN PROCESS

- APRO 905 (DRAFT), GUIDELINES FOR THE APPLICATION OF COMPETITION FEB 81
- APRO 81-06 (RESEARCH IN PROGRESS), COMPETITION MODELING JUL 81

6. William Williams, US Army

APRO 709-3

DETERMINING AND FORECASTING SAVINGS

FROM COMPETING PREVIOUSLY SOLE SOURCE/NONCOMPETITIVE CONTRACTS OCT 78

- INVESTIGATION OF 16 MISSILE AND ELECTRONIC ACQUISITIONS
- ACQUISITIONS ORIGINALLY SOLE SOURCE, THEN COMPETITIVE BUYOUTS
- STUDY SEPARATED COMPETITIVE SAVINGS INTO - REDUCTIONS DUE TO CONTRACTOR LEARNING SAVINGS DUE TO EFFECTS OF COMPETITION

● OBJECTIVES

DETERMINE SAVINGS FROM COMPETITION

DEVELOP SAVINGS METHODOLOGIES FOR COMPETITION

● CONCLUSIONS

ESTIMATED SAVINGS METHODOLOGY DEVELOPED

AVERAGE GROSS SAVINGS AFTER COMPETITION EQUALED 13.7%

AVERAGE NET SAVINGS EQUALED 10.8%

FORECASTING SAVINGS METHODOLOGY DEVELOPED - INCLUDES REGRESSION AND QUALITATIVE ANALYSIS

APRO 807

FORECASTING SAVINGS FROM REPETITIVE

COMPETITION WITH MULTIPLE AWARDS NOV 79

- INVESTIGATION OF AMMUNITION CONTRACTS

- UNIQUE CHARACTERISTICS OF AMMUNITION COMPETITION

- STUDY OBJECTIVE

PROVIDE DECISION MAKERS TOOL TO ASSIST IN MAKING SAVINGS ESTIMATES

- FINDINGS AND CONCLUSIONS

SAVINGS METHODOLOGY DEVELOPED

AVERAGE COMPETITIVE SAVINGS WERE 7.1%

FORECASTING METHODOLOGY DEVELOPED - INCLUDES ECONOMIC AND QUALITATIVE

FACTORS

APRO P-5

SOLE SOURCE AND COMPETITIVE PRICE TRENDS

IN SPARE PARTS ACQUISITION JAN 81

- INVESTIGATION OF BREAKOUT ITEMS FOR PRIMARILY ARMY AVIATION SYSTEMS
 - MAKES USE OF NONPARAMETRIC STATISTICAL TESTS
 - RESEARCH QUESTIONS
- DOES COMPETITIVE PROCUREMENT REFLECT A STEEPER EXPERIENCE CURVE THAN

SOLE SOURCE PROCUREMENT?

WHAT PERCENTAGE SAVINGS IS REALIZED ON FIRST COMPETITIVE BUY?

- FINDINGS

SOLE SOURCE AND COMPETITIVE LEARNING CURVE SLOPES ESSENTIALLY EQUAL
WITH COMPETITIVE SLOPES SLIGHTLY STEEPER

MEDIAN COMPETITIVE SAVINGS ON FIRST COMPETITIVE BUY EQUATED 24.3%

APRO 905

GUIDELINES FOR THE APPLICATION
OF COMPETITION

- OBJECTIVES
 - TO DEVELOP A PRIMER ON COMPETITION
 - TO SYNTHESIZE FINDINGS FROM PREVIOUS COMPETITION STUDIES
 - TO PROVIDE GUIDELINES ON ACQUISITION STRATEGY DEVELOPMENT
- REPORT CONTENT
 - DETAILED TREATMENT OF SECOND SOURCING METHODS (TDP-FORM, FIT, FUNCTION-LEADER/
FOLLOWER-EDUCATIONAL BUY-LICENSING-TEAMING-BREAKOUT)
 - DISCUSSION OF QUALITATIVE FACTORS
 - (FUNDS, QUANTITIES, COMPLEXITY, FACILITY COSTS, ECONOMIC CLIMATE, ETC)
 - MATRIX INTERRELATIONSHIP OF METHODS AND FACTORS
- CONCLUSIONS
 - TDP REMAINS DOMINANT METHOD
 - EARLY PLANNING IMPERATIVE
 - FUNDS MUST BE PROVIDED FOR SECOND SOURCING

APRO 81-06
COMPETITION MODELING

- OBJECTIVES

TO DEVELOP A CASE STUDY ON COMPETITION PLANNING
FOR A HYPOTHETICAL SYSTEM
TO PROVIDE A SCENARIO FOR DISCUSSION OF COMPETITION
STRATEGY DEVELOPMENT

- STUDY APPROACH

REVIEW COMPLETED COMPETITION STUDIES
USE MLRS STUDY AS BASIS FOR CASE
EXAMINE STRATEGIES OF OTHER PROGRAMS
EMPHASIZE COMPETITION PLANNING AND SECOND SOURCING ANALYSIS

7. *John Hiller,*
RAND Corporation

COMPETITION IN ACQUISITION

SELECTED RAND STUDIES

- 0 FACTORS AFFECTING THE USE OF COMPETITION IN WEAPON SYSTEM ACQUISITION (R-2706-DR&E, FEBRUARY 1981)
- 0 ACQUISITION POLICY EFFECTIVENESS: DoD EXPERIENCE IN THE 1970's (R-25L6-DR&E, OCTOBER 1979)
- 0 COMPETITION IN THE ACQUISITION OF MAJOR WEAPON SYSTEMS: LEGISLATIVE PERSPECTIVES (R-2058-PR, NOVEMBER 1976)

OBJECTIVES OF RECENT WORK (R-2706-DR&E)

- 0 IDENTIFY FACTORS LEADING TO USE OR REJECTION OF COMPETITION
- 0 REVIEW WORK ON QUANTITATIVE EFFECTS OF COMPETITION
- 0 SUGGEST HOW DoD MIGHT STIMULATE MORE EFFECTIVE COMPETITION
IN MAJOR ACQUISITION PROGRAMS

DATA BASE

0 MANAGEMENT CASE STUDIES OF:

- | | |
|----------------------|---|
| - AH - 64 HELICOPTER | - SPARROW MISSILE |
| - LWF/F-16 AIRCRAFT | - F-18 AIRCRAFT |
| - HARPOON MISSILE | - M-198 HOWITZER |
| - MAVERICK MISSILE | - ADVANCED SELF PROTECTION
JAMMER (ASPJ) |

0 QUANTITATIVE STUDIES BY:

- ARMY PROCUREMENT RESEARCH ORGANIZATION
- INSTITUTE FOR DEFENSE ANALYSES
- U.S. ARMY ELECTRONICS COMMAND

POTENTIAL BENEFITS OF COMPETITION

- 0 IMPROVED PRODUCT QUALITY
- 0 LOWER UNIT COSTS
- 0 FASTER LEARNING RATES BY MANUFACTURERS
- 0 GREATER TECHNOLOGICAL PROGRESS
- 0 ENHANCED INDUSTRIAL PRODUCTIVITY
- 0 ENLARGED SURGE AND MOBILIZATION CAPACITY
- 0 MORE EQUITABLE PROCESS OF AWARDING ACQUISITION CONTRACTS

POTENTIAL APPLICATIONS OF COMPETITION

- DESIGN, PRICE, PERFORMANCE COMPETITION
- LEADER--FOLLOWER
- DIRECTED LICENSING
- FUSION--FISSION
- COMPONENT AND SUBSYSTEM BREAK-OUT
- ONE-TIME BUY-OUT
- COMPETITIVE REPROCUREMENT

CONCLUSIONS: QUANTITATIVE RESEARCH

- 0 CONSIDERABLE PROGRESS HAS BEEN MADE, BUT NUMEROUS FACTORS STILL
NEED TO BE CONSIDERED:
 - RATE OF PRODUCTION
 - CAPITAL INVESTMENT
 - PRODUCT MIX OF FIRM
 - CAPITAL UTILIZATION RATE AND BUSINESS CONDITIONS
 - CONTRACT FORM
 - MANUFACTURING TECHNOLOGY
- 0 CURRENT DATA NOT ADEQUATE TO SUPPORT EXTENSIVE ANALYSES

CONCLUSIONS: PRIOR TO FSD

- 0 INVESTMENTS FOR COMPETITION ARE SMALL
- 0 BENEFITS WIDELY PERCEIVED, THOUGH QUANTITATIVE EVIDENCE IS LACKING
- 0 COMPETITION GENERALLY APPLIED
- 0 LITTLE OR NO ADDITIONAL INCENTIVE NEEDED TO ENCOURAGE COMPETITION DURING CONCEPT FORMULATION, DEMONSTRATION AND VALIDATION PHASES

CONCLUSIONS: PRODUCTION

- 0 INVESTMENTS ARE LARGE AND IMMEDIATE; POTENTIAL BENEFITS ARE DISTANT AND UNCERTAIN
- 0 PROGRAM SCHEDULE LENGTHENS AND MANAGEMENT COMPLEXITY INCREASES
- 0 PROGRAM MANAGERS OFTEN DOUBT EVIDENCE FROM OTHER PROGRAMS, APPLICABILITY OF COMPETITION TO THEIR PROGRAM, AND SUPPORT OF HIGHER LEVELS
- 0 QUANTITATIVE LITERATURE DOES NOT PROVIDE STRONG, USEFUL INFORMATION ON BENEFITS OF COMPETITION, OR GUIDANCE ON ITS APPLICATION

CONCLUSIONS: PRODUCTION (CONT'D)

- o To ENCOURAGE COMPETITION, MANAGERS NEED:
 - EVIDENCE THAT IT WILL PAY OFF FINANCIALLY
 - PRACTICAL GUIDANCE ON HOW TO CHOOSE CANDIDATES AND HOW TO STRUCTURE THE COMPETITION
 - SUPPORT FOR FRONT-END FUNDING, WITH A LONG-TERM COMMITMENT TO THAT FUNDING
- o DoD Must DEVELOP CRITERIA FOR SELECTIVE APPLICATION OF COMPETITION, BUT TO DO SO IT SHOULD DEVELOP MORE EFFECTIVE METHODOLOGIES

8. *William Drinnon, Putnam,
Hayes, and Bartlett, Inc.*

PUTNAM, HAYES & BARTLETT, INC.

COMPETITION STUDIES

Bill Drinnon
19 May 1981

PUTNAM, HAYES & BARTLETT, INC.

OVERVIEW

- Who we are
- What we do
- Description of our methodology
- Lessons learned from our work

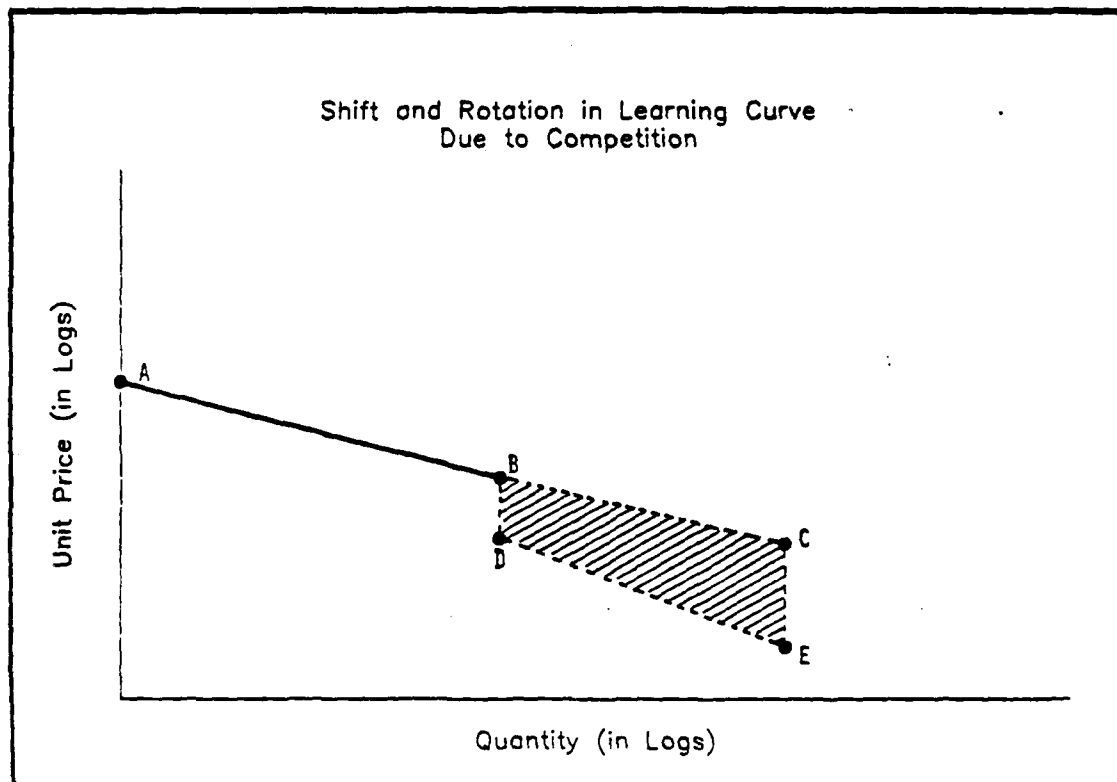
PUTNAM, HAYES & BARTLETT, INC.

- Founded: 1976
- Purpose: Provide economic analysis of government-business problems
- Offices: Cambridge, Massachusetts
Washington, D.C.
- Current Major Product Areas:
 - Corporate Strategies
 - Litigation Support
 - Public Policy
 - Defense

PUTNAM, HAYES & BARTLETT, INC.

PHB COMPETITION STUDIES
(Establishing Second Production Sources)

- Apply learning curve model as gross screening device:



- Difficulties:
 - Parameter estimates
 - Rate effects
- Sensitivity analysis

PUTNAM, HAYES & BARTLETT, INC.

PHB COMPETITION STUDIES
(continued)

- Establish technical feasibility
 - Status of the Technical Data Package
 - Existence of proprietary data and processes
 - Degree of manufacturing complexity
 - Availability of sources

PHB COMPETITION STUDIES
(continued)

- Review program issues:
 - Administrative lead time
 - Production lead time
 - Configuration management
 - Prime support required

PHB COMPETITION STUDIES
(continued)

- Perform detailed economic analysis:
 - Establish expected cost of sole source procurement
 - Estimate additional non-recurring costs of competition:
 - New facilities construction
 - Special test equipment for second source
 - Special tooling for second source
 - Additional system engineering and program management personnel for second source
 - Prime contractor support contracts
 - Production qualification testing
 - Additional government program management personnel
 - Estimate recurring costs of competitive sources:
 - Increased cost of learning buys at second source
 - Increased costs due to learning loss from split buys
 - Increased costs due to rate effects
 - Decreased costs due to effects of competition
 - Consider impact of facility amortization agreements
 - Consider impact of multinational production agreements

PHB COMPETITION STUDIES
(continued)

- Evaluate alternative competitive options
 - Competition of the existing design
 - Use of Technical Data Package (TDP)
 - Use of Leader/Follower technique
 - Use of Licensing
 - Competition of alternative design
 - Form, Fit, Function
- Develop detailed implementation plans

LESSONS LEARNED

- Government needs to know the weapon system:
 - To thwart obstructionism
 - To identify feasible options

- Analysis needs to rest on sound conceptual framework:
 - Appropriate learning curve model
 - Valid parametric estimates of competition's effects
 - Consideration of rate effects based on:
 - Parametric analysis
 - Microeconomic analysis on program basis
 - Detailed understanding of firm's accounting system

LESSONS LEARNED
(continued)

- Be careful with facility amortization agreements:
 - Upfront savings costly later
 - First source surge capacity versus second source
- Prepare for early production competition
 - Obtain agreements before picking producer
 - Avoid first producer peak
 - Split fiscal year buys (e.g., 1st FY83 buy noncompetitive, 2nd FY83 buy competitive)

LESSONS LEARNED
(continued)

- Government can obtain first producer's cooperation:
 - Government can offer things of value:
 - Role in source selection
 - Production share guarantees
 - Configuration management
 - Design responsibilities
 - Logistics support role
 - Investment amortization agreements
 - Government has array of contract clauses available:
 - Progress payments
 - Award fees
 - First source guarantees of second source production
 - Government monitoring required
- Multinational production agreements can restrict competitive options.
- Beware of buy outs.

9. Jacques Gansler, *The Analytical
Sciences Corporation*

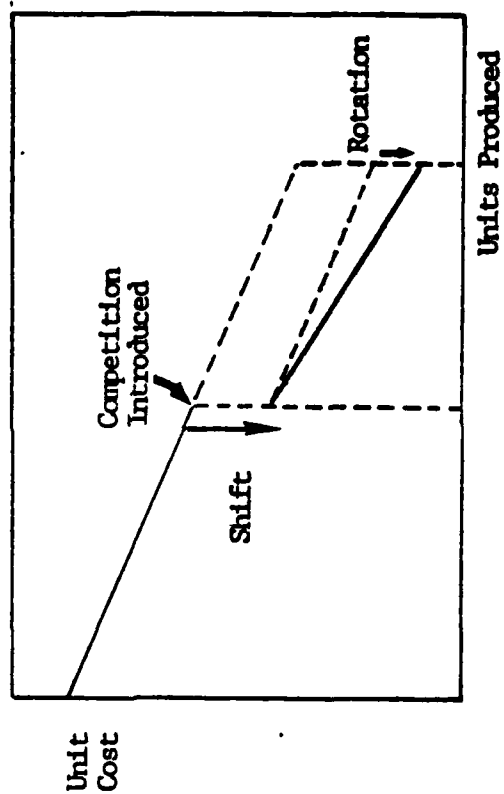
TASC
THE ANALYTICAL SCIENCES CORPORATION

COMPETITION ANALYSES

OVERVIEW

- POTENTIAL SAVINGS DUE TO COMPETITION
- COMPETITION AND MULTI-YEAR CONTRACTING
- COMPETITION FOR SERVICE CONTRACTS
- SUMMARY

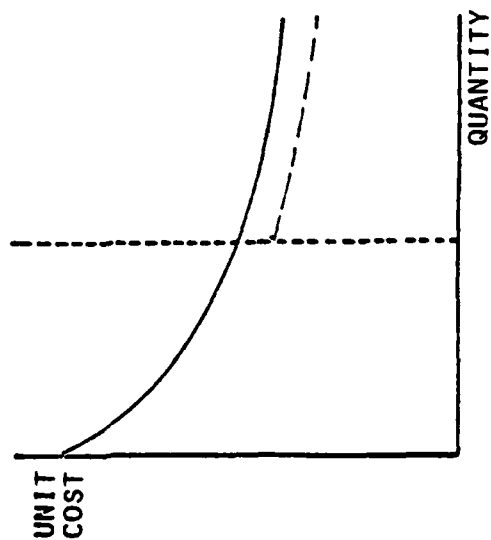
THEORETICAL FRAMEWORK SHIFT & ROTATION



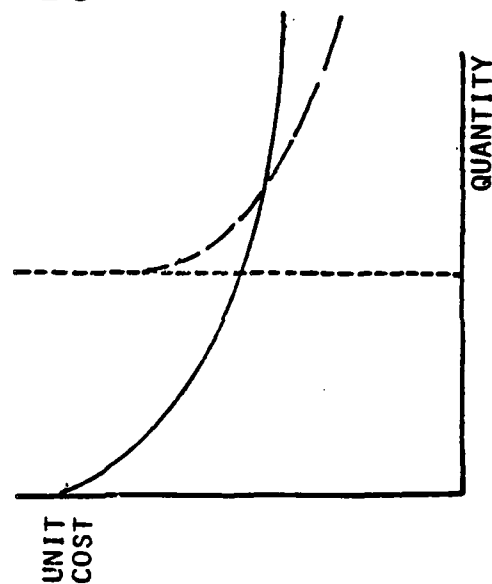
KEY FACTORS THAT IMPACT ON POTENTIAL SAVINGS

- INITIAL COST IMPROVEMENT RATE
- PRODUCTION QUANTITY AND RATE
- TIMING OF COMPETITIVE AWARDS

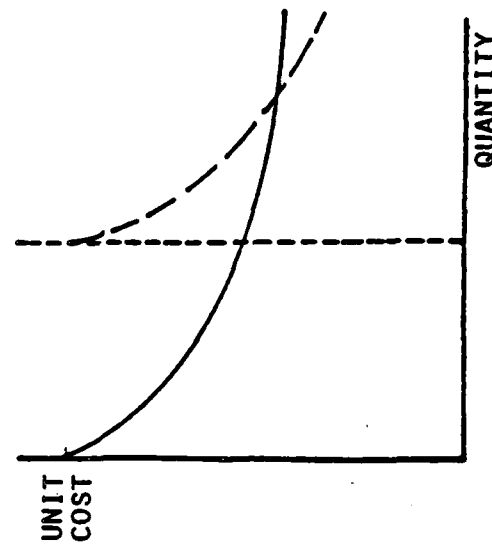
THE IMPACT OF COMPETITION SECOND SOURCE BEHAVIOR FOR VARIOUS SYSTEMS



ELECTRONIC SUBSYSTEMS



TACTICAL MISSILES

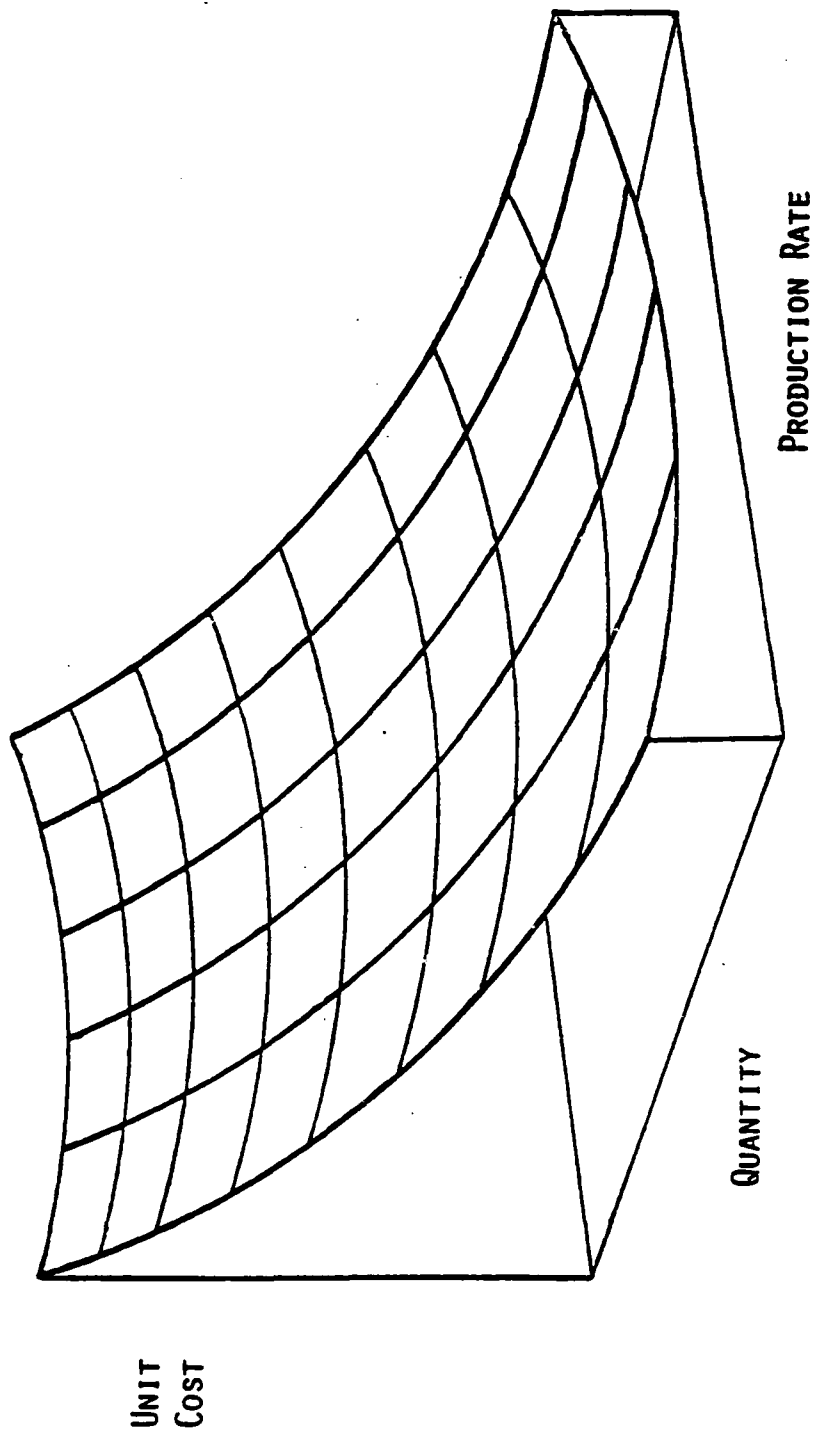


SHIP

↑
INCREASING COMPLEXITY

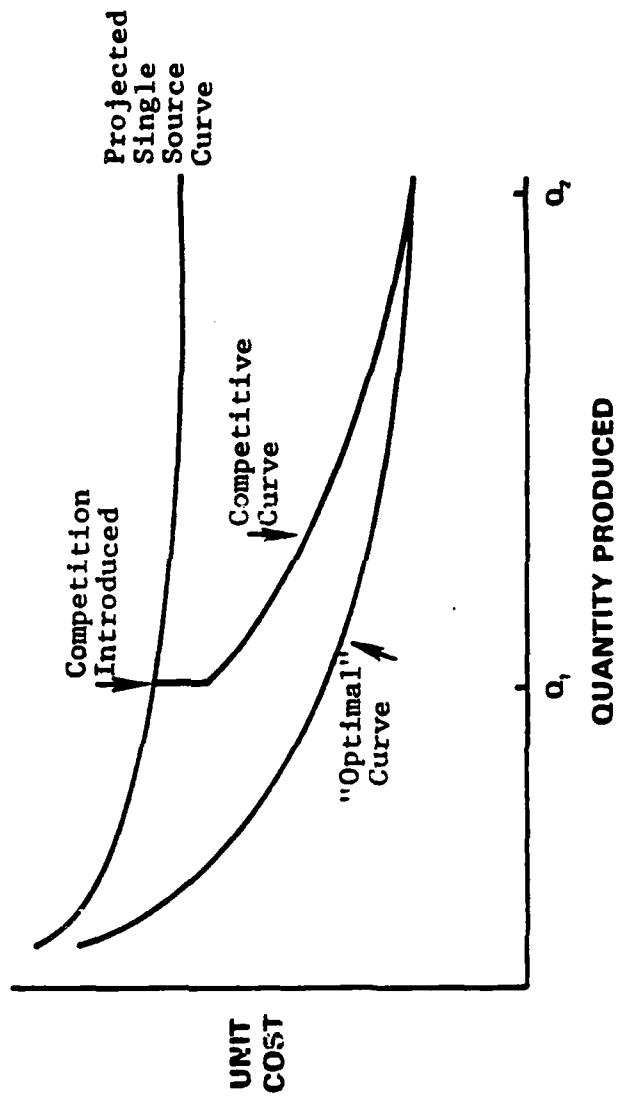
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THE ANALYTICAL SYSTEMS CORPORATION

THE COST IMPROVEMENT AND PRODUCTION RATE SURFACE



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THE ANALYTICAL SERVICES CORPORATION

THE IMPACT OF COMPETITION



MODEL PARAMETERS FOR TACTICAL MISSILE DATA

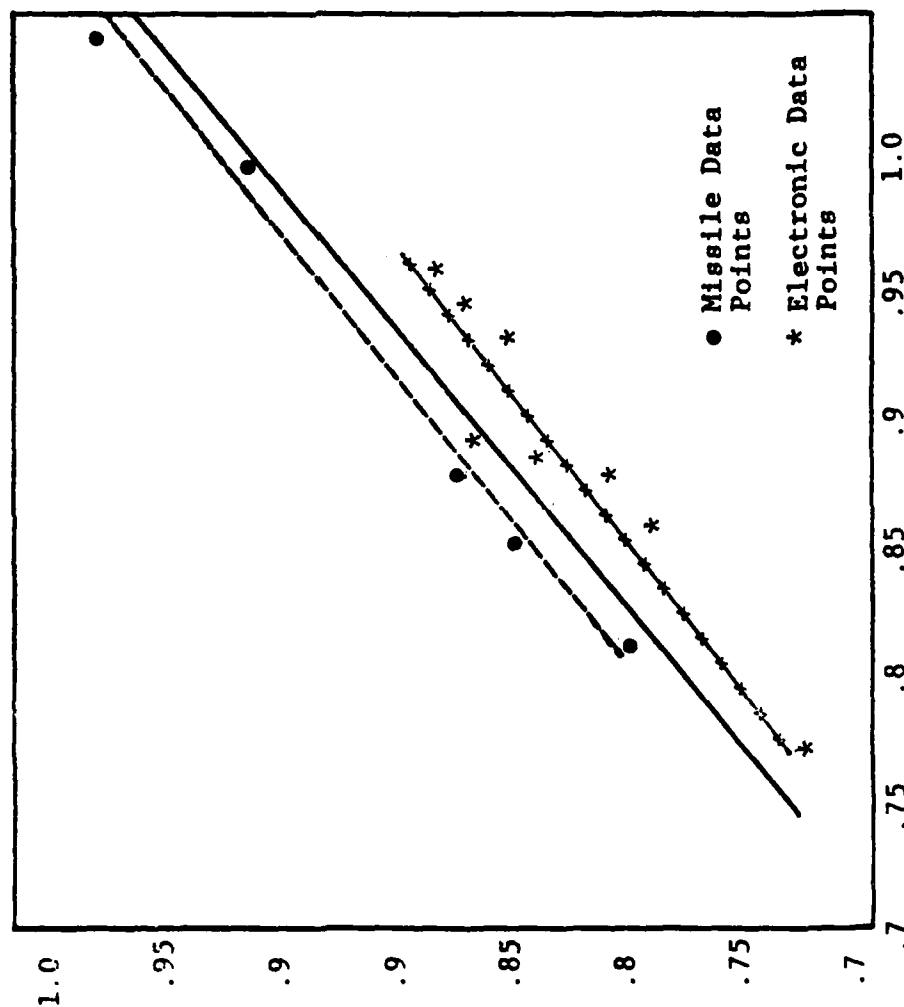
Data	First Unit Cost	Sole		Production		Competitive		Quantity Produced Prior to Competition	"Optimal" Cost Improvement Curve Slope
		Source Improvement Curve Slope	Cost	Rate Curve Slope	Optimum Lot Size	Shift	Rotation		
Sparrow (1st Source)	415,336	.846		.985	1,250	4.3%	8.1%	1,625	.833
Sparrow (2nd Source)	450,186	.874		.923	1,250	-0.4%	13.2%	505	.849
Bullpup	53,416	.823		1.004	7,950	12.6%	11.8%	7,520	.800
TOW	5,297	.991		1.007	6,000	15.5%	35.0%	15,750	.926
Sidewinder	16,021	1.047		.819	4,150	16.3%	34.7%	11,285	.982

TASC
THE ANALYTIC SCIENCE CORPORATION

MODEL PARAMETERS FOR MILITARY ELECTRONICS DATA

Data Source	Sole-Source			Rate Curve Slope	Optimum Lot Size	"Optimum" Curve Slope
	First Unit Cost	Cost-Imp Curve Slope				
AERNO 60-6402 Electronic Control Amplifier	16,876	.922		.960	140	.848
TE-204 Cable Combiner	36,143	.880		.947	> 633	.832
TD-660 Multiplexer	429,970	.754		.888	> 1425	.729
TD-202 Radio Combiner	31,293	.874		.946	> 2635	.816
MD-522 Modulator- Demodulator	20,786	.860		.975	950	.806
ASW-27 Avionics	244,790	.883		.877	> 100	.846
AN/APM-123 Transponder Test Unit	14,528	.957		.967	325	.882
TD-352 Multiplexer	13,181	.967		1.015	> 2358	.891

CORRELATION BETWEEN NON-COMPETITIVE AND "OPTIMAL" COMPETITIVE COST IMPROVEMENT CURVE SLOPES

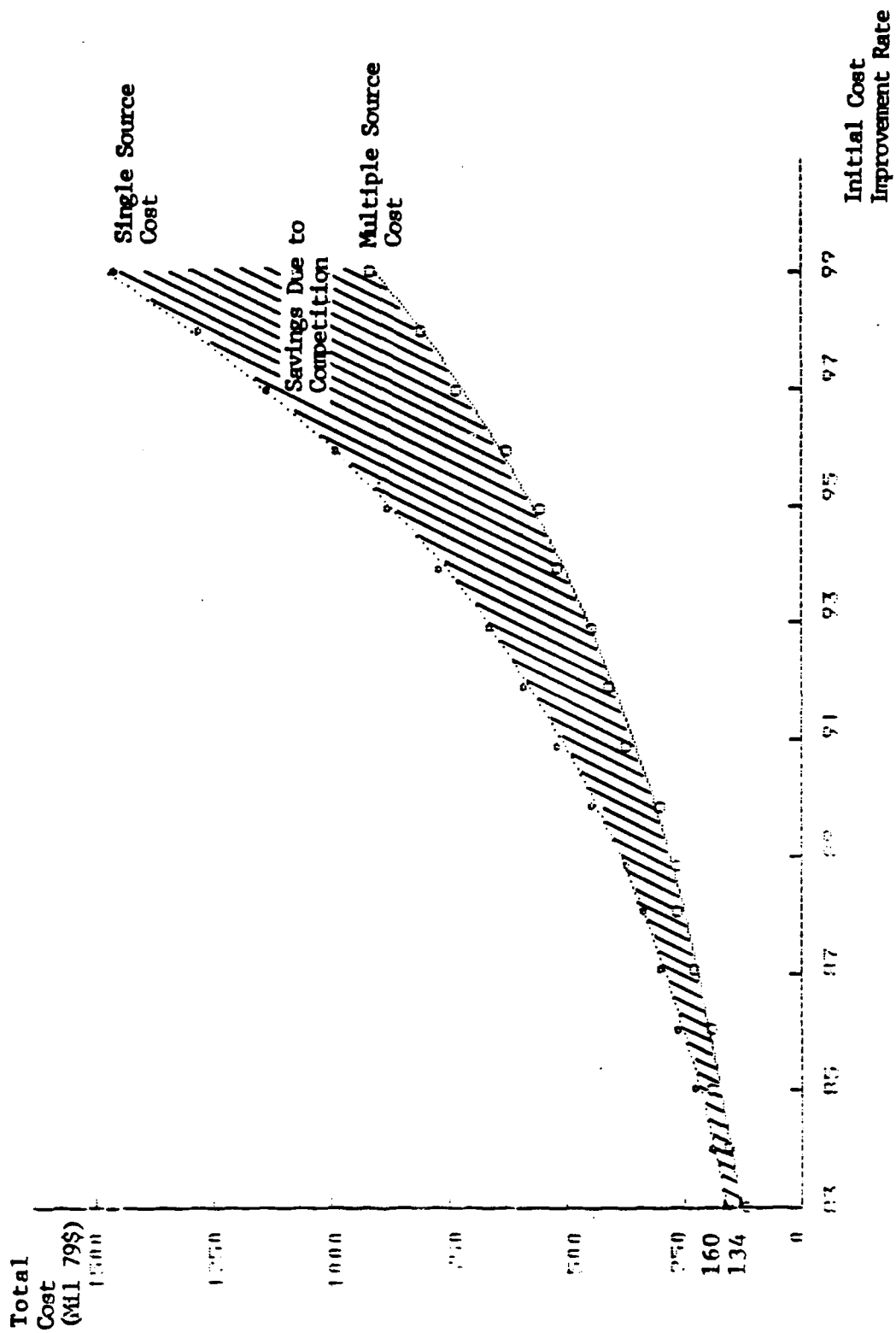


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THE ANALYTICAL SCIENCE CORPORATION

CORRELATION BETWEEN NON-COMPETITIVE AND "OPTIMAL" COMPETITIVE COST IMPROVEMENT CURVE SLOPES

DATA	SAMPLE SIZE	CORRELATION COEFFICIENT	T-VALUE/ LEVEL OF SIGNIFICANCE	F-VALUE/ LEVEL OF SIGNIFICANCE
TACTICAL MISSILES	5	.995	16.9/.001	285/.05
MILITARY ELECTRONICS	8	.936	14.4/.001	207/.05
BOTH	13	.972	13.8/.001	189/.05

INITIAL COST IMPROVEMENT RATE



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THE ANALYTICAL SERVICES CORPORATION

ARMY PERSONNEL RESEARCH OFFICE WASHINGTON DC F/6 15/5
RESULTS OF THE JOINT DOD/OFPP COMPETITION WORKSHOP HELD 12-13 M-ETC(U)
MAY 81
APRO-81-63 NL

F/6 15/5

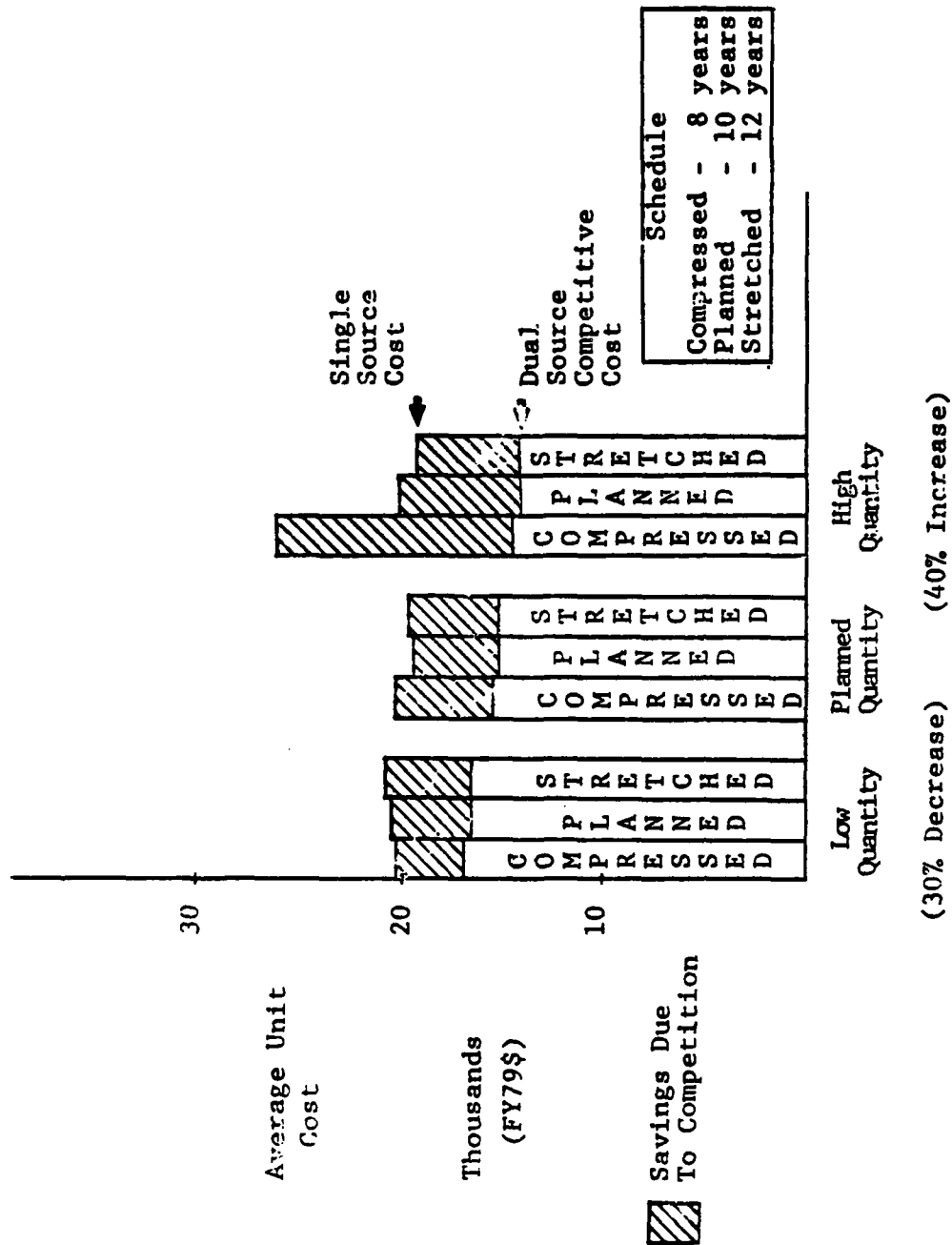
ARMY PERSONNEL RESEARCH OFFICE WASHINGTON DC F/6 15/5
RESULTS OF THE JOINT DOD/OFPP COMPETITION WORKSHOP HELD 12-13 M-ETC(U)
MAY 81
APRO-81-63 NL

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ADA
3850

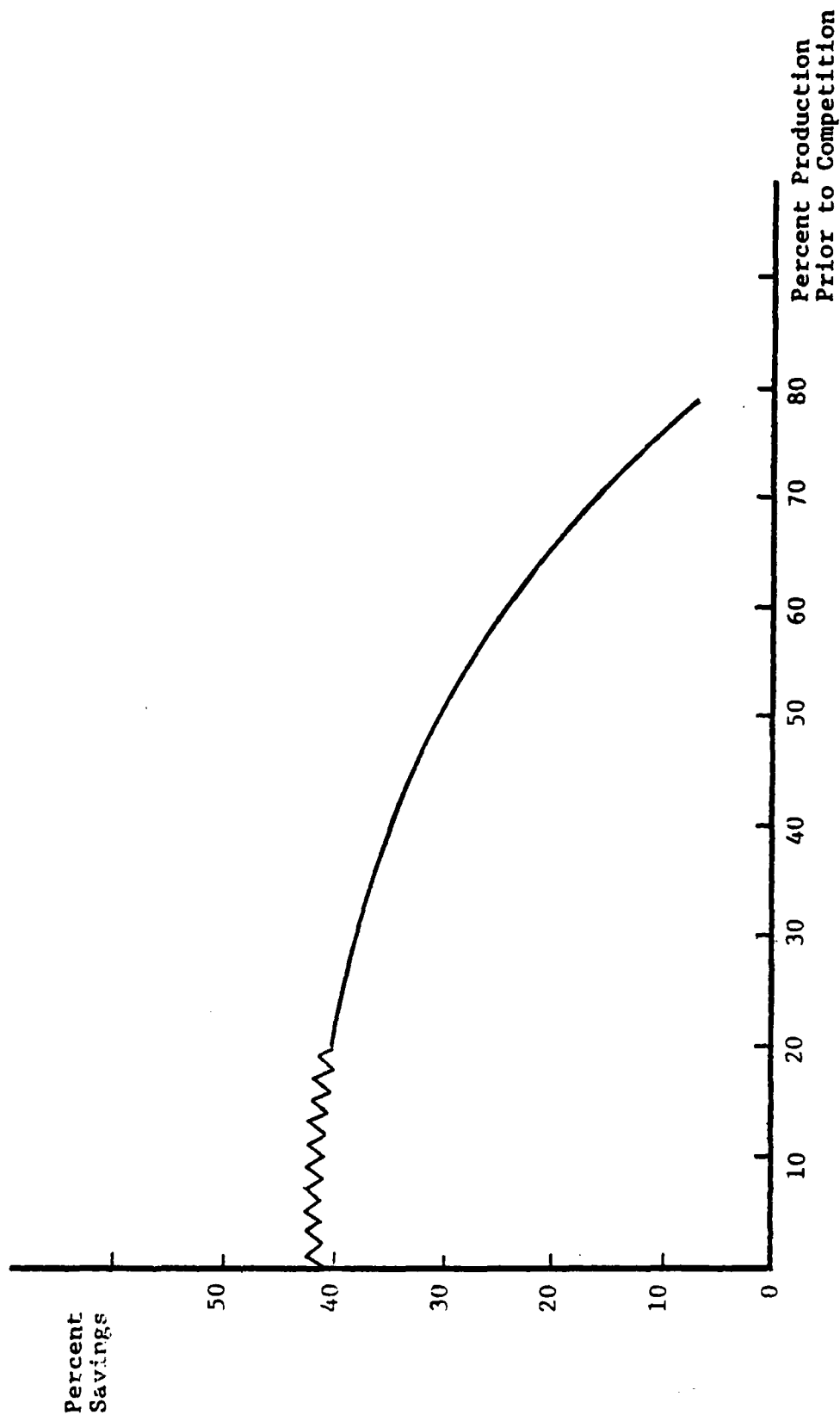
2 of 3
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THE EFFECTS OF VARIATIONS IN PRODUCTION QUANTITY AND RATE ON THE COMPETITION DECISION

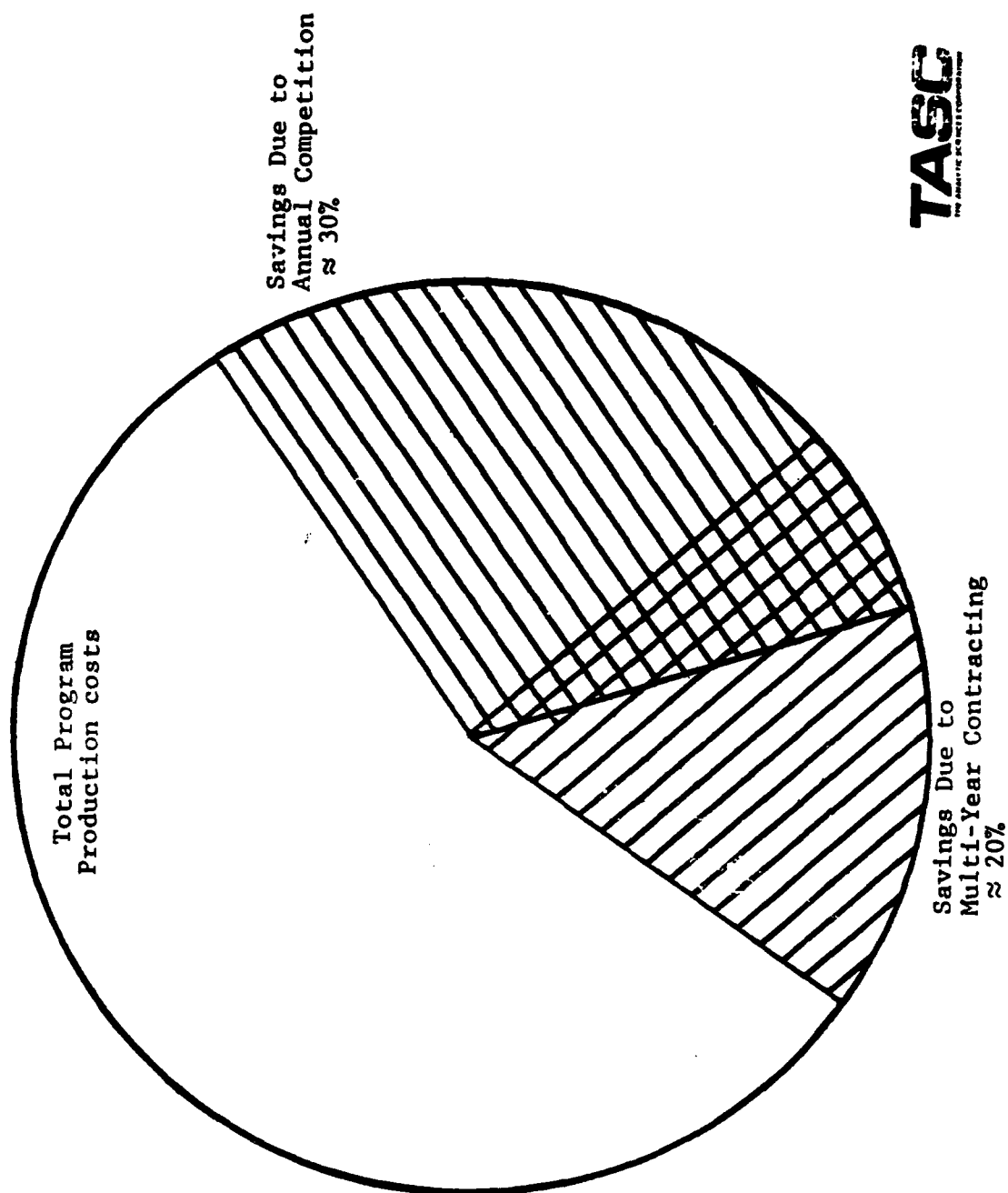


TASC

TIMING OF COMPETITIVE AWARDS



INTERACTION BETWEEN COMPETITION AND MULTI-YEAR CONTRACTING

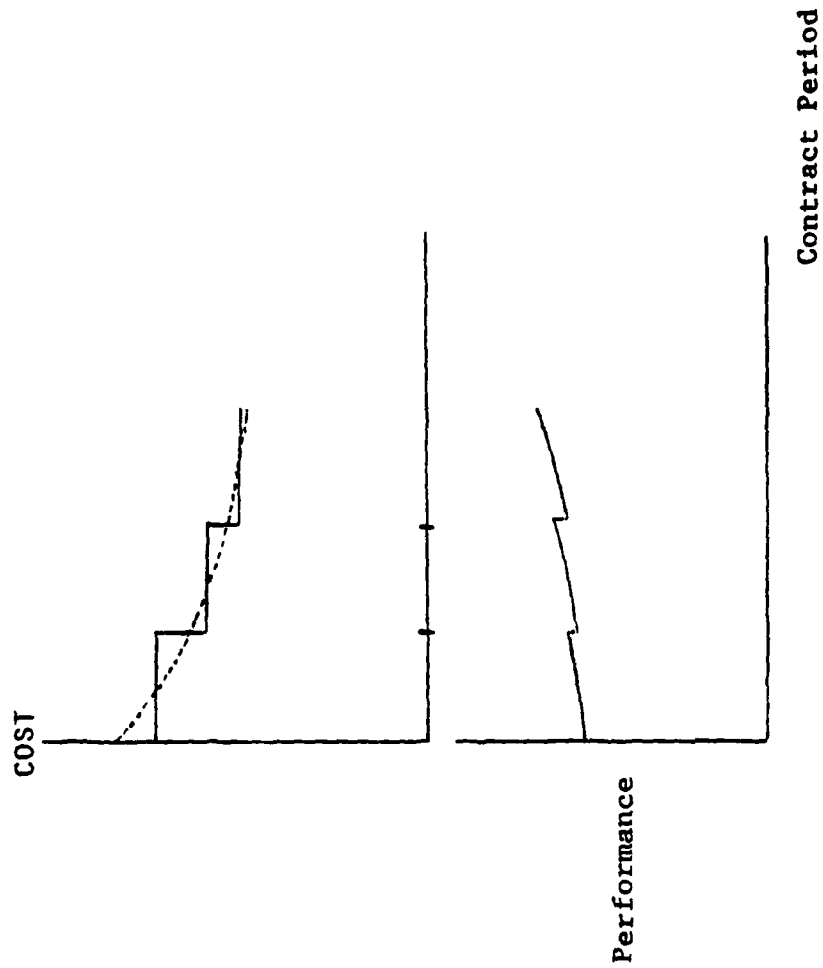


TASC
THE ANALYTICAL & STRATEGIC CONSULTING CORPORATION

AREAS OF ANALYSIS FOR PROPER IMPLEMENTATION OF COMBINED COMPETITION AND MULTI-YEAR CONTRACTING

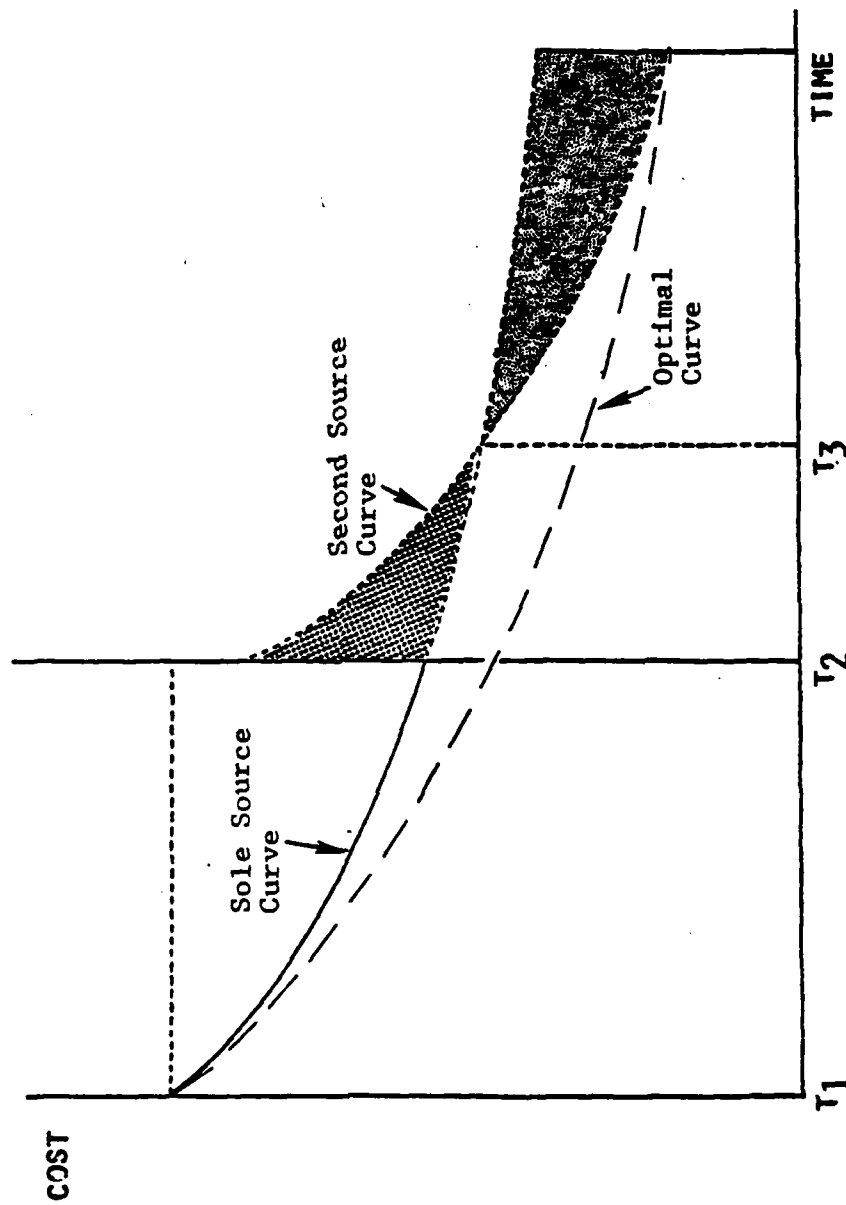
- TIMING AND LENGTH OF MULTI-YEAR CONTRACTS TO MAXIMIZE BENEFITS OF COMPETITION AND MULTI-YEAR CONTRACTING
- INNOVATIVE CONTROL OF DESIGN CHANGES
- FUNDING PROFILE TO BALANCE GOVERNMENT AND CONTRACTOR RISKS.

COST IMPROVEMENT FORCES ON SERVICE CONTRACTS



TASC
THE ASSOCIATION OF
TRANSPORTATION
AND
CONSTRUCTION
INDUSTRIES

EFFECT OF COMPETITIVE PRESSURE



FACTORS WHICH IMPACT SAVINGS FOR SERVICE CONTRACTS

- NATURE OF THE SERVICE
- COST-PERFORMANCE TRADEOFFS
- COST IMPROVEMENT CURVE EFFECTS
- FREQUENCY OF THE COMPETITION.

CONCLUSION

- THE POTENTIAL BENEFITS DUE TO COMPETITION ARE DETERMINED BY UNIQUE PROGRAM CHARACTERISTICS
- COMPETITION IS IMPLEMENTED AT THE PROGRAM MANAGEMENT LEVEL
- IN ORDER TO MAXIMIZE THE BENEFITS OF COMPETITION, PLANNING AND IMPLEMENTATION SHOULD BE TAILORED FOR EACH PROGRAM.

10. *Mr. Paul Carrick, Institute
for Defense Analyses*

COMPETITION IN THE
GAU 8/A SYSTEM

GAU-8/A 30mm AMMUNITION PROGRAM HISTORY

PROGRAM EVENT	DATE OR TIME PERIOD
<p>AIRCRAFT, GUN & AMMUNITION VS MISSILE</p> <p>CONCEPT FORMULATION</p> <p>SOURCE SELECTION - COMPETITIVE PROTOTYPE PHASE</p> <p>AIRCRAFT (NORTHROP VS FAIRCHILD)</p> <p>GUN - AMMUNITION PROTOTYPE COMPETITION</p> <p>(GE & AOC VS FORD & HW)</p> <p>WINNERS SELECTED FOR FULL SCALE DEVELOPMENT (FAIRCHILD, GE, AOC)</p> <p>DSARC II</p> <p>SECOND SOURCE COMPETITION FOR 30 mm RD (HW VS AVCO)</p> <p>HONEYWELL WINS & STARTS FSD</p> <p>DSARC III A</p> <p>DSARC III B</p> <p>A-10 IOC</p>	<p>1966-1970</p> <p>1970-1973</p> <p>1971 - 1973</p> <p>JUNE 1973</p> <p>JUNE 1973</p> <p>AUGUST 1973-MARCH 1974</p> <p>MARCH 1974</p> <p>NOVEMBER 1974</p> <p>JANUARY 1976</p> <p>JANUARY 1978</p>

SIGNIFICANT TECHNICAL DEVELOPMENTS IN THE GAU-8/A 30mm ROUNDS ACQUISITION

- ADOPTION OF AN ALUMINUM CARTRIDGE CASE FOR WEIGHT REDUCTION**
- USE OF DEPLETED URANIUM (DU) AS PENETRATOR FOR THE ARMOR PIERCING ROUND**
- CREATION OF A U.S. DU PROCESSING, FORMING, AND FABRICATION PRODUCTION CAPABILITIES**
- USE OF PLASTIC ROTATING BANDS**
- USAF ADOPTION OF A BREAK-IN PROGRAM FOR GFM ITEMS:**

PRIMER

IGNITER

HEI FUZE

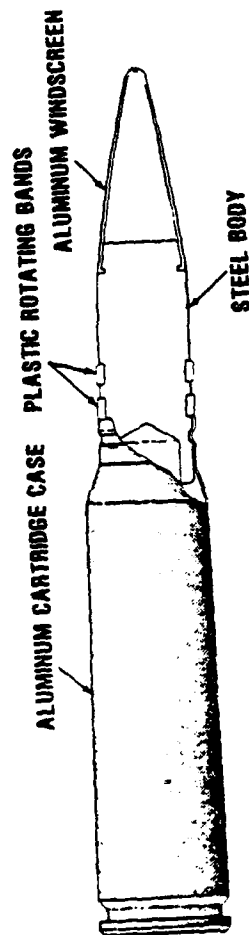
HEI EXPLOSIVE MIX

5-5-81-2

THE GAU-8/A FAMILY OF 30mm AMMUNITION

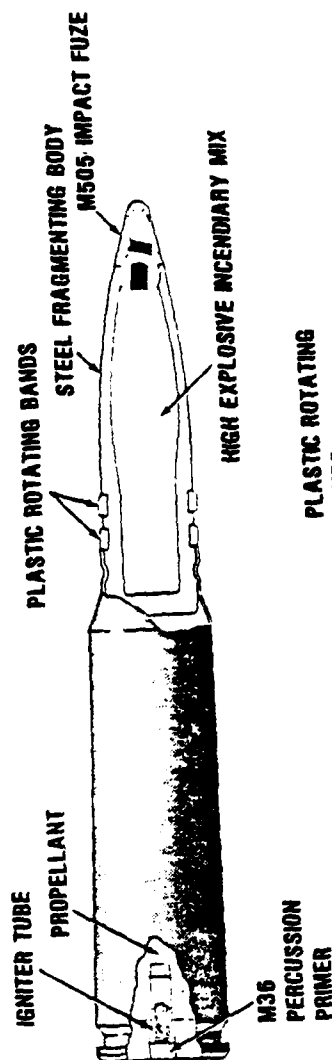
PGU-15/B TARGET PRACTICE (TP)

AN ECONOMICAL SIMULATOR FOR USE IN TRAINING, WEAPONS TESTING, AND AIRCRAFT SYSTEMS CHECKOUT



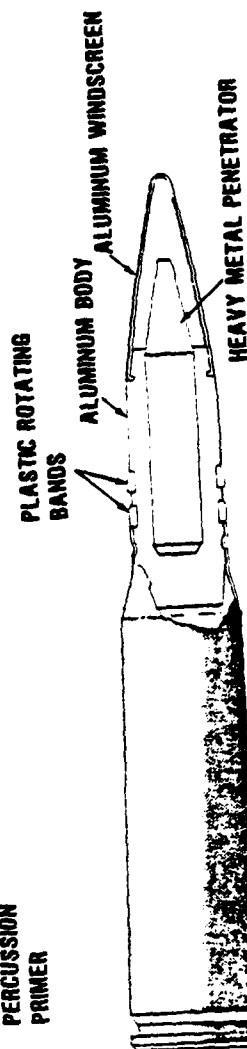
PGU-13/B HIGH EXPLOSIVE INCENDIARY (HEI)

PROVIDES FRAGMENTATION AND INCENDIARY EFFECTS FOR USE AGAINST PERSONNEL, TRUCKS, FUEL AND AMMUNITION STORAGE, AND MANY OTHER TARGETS



PGU-14 B/B ARMOR PIERCING INCENDIARY (API)

FOR USE AGAINST ARMORED VEHICLES SUCH AS MEDIUM TANK AND ARMORED PERSONNEL CARRIER. THE HIGHEST DENSITY PENETRATOR AND THE LARGE CALIBER (30 mm) PROVIDE ARMOR PENETRATION CAPABILITY



Source: The Aerojet Ordnance Company, Downey, California.

6.5.81.3

SIGNIFICANT USAF/CONTRACTOR COMPETITIVE GROUND RULES

**EACH CONTRACTOR FACILITIZED TO 60% OF ANNUAL MOBILIZATION PRODUCTION REQUIREMENTS
(i.e., 500 K ROUNDS/MONTH)**

PROCUREMENTS MADE UNDER EXCEPTION 16

FREEDOM OF DESIGN (TDP FOR FORM-FIT AND FUNCTION ONLY)

**USAF HAS FUNDED \$40 M (MOSTLY DIPEC) IN FACILITY INVESTMENT FOR THE TWO BUYERS AND
CERTAIN OF THEIR SUBCONTRACTORS. THE TWO CONTRACTORS HAVE INVESTED OVER \$20 M**

— EXTENSIVE USE OF EXISTING AMMO PRODUCTION MOBILIZATION BASE, GOCO AND COCO

NO INTERCHANGE OF DESIGN CHANGES BETWEEN CONTRACTORS

SUMMARY OF GAU-8/A AMMUNITION ACQUISITION PROGRAMS

FISCAL YEAR	BUDGET/EXPENDITURES (THEN YEAR \$ M) ^a			NUMBER OF ROUNDS ACQUIRED (ALL TYPES) ^b		
	AMMUNITION	GFM	TOTAL	AOC	HW	TOTAL
1971-1972 ^c	—	—	\$5	153,000	—	153,000
1973-1974	—	—	9	212,000	—	212,000
1975 ^d	\$ 12.5	\$ 3.2	15.7	467,500	106,000	573,500
1976	43.4	?	43.4	836,000	550,000	1,386,000
1977	116.5	?	116.5	3,234,600	2,308,400	5,543,000
1978	117.3	?	117.3	3,563,000	4,535,000	8,098,000
1979	152.2	?	152.2	6,063,128	3,403,223	9,466,351
1980	51.1	6.3	157.4	6,087,742	4,783,226	10,870,968
1981	105.5	12.6	118.1	4,020,782	3,159,186	7,179,968
1982	104.1	12.4	116.5	4,020,782	3,159,186	7,179,968
1983	109.5	13.1	122.6	CONTRACTS NOT YET AWARDED		
1984	111.4	13.3	124.7	CONTRACTS NOT YET AWARDED		
1985	120.3	14.4	134.7	CONTRACTS NOT YET AWARDED		

^a USAF, Acquisition Plan #80-1-329A, D&F Summary Sheet.

^b USAF: ASD, letter of February 8, 1980: Price Memorandum.

^c Aerojet Ordnance Company, GAU-8/A Ammunition Program History.

^d Cost of government furnished materials is included in the ammunition value for 1976-1979.

GAU-8/A SPLIT AWARD METHODOLOGY ONLY TWO BIDDERS

MAXIMUM EXCURSION IN SPLIT AWARD OF 65%-35%

PRICE SUBMISSION REQUIREMENTS: PRICES ESTIMATED FOR 35%, 50% AND 65% OF THE TOTAL BUY

— THE THREE BIDS MUST LIE ON A LOGARITHMIC PRICE CURVE

BUYER CALCULATES AN AVERAGE ADJUSTED CONTRACTOR BID (ACB)

$$ACB^* = \frac{ACB_{35} + ACB_{50} + ACB_{65}}{3}$$

PERCENTAGE ALLOCATION OF TOTAL BUY QUANTITY DETERMINED BY MAGNITUDE OF THE ACB* DIFFERENCE

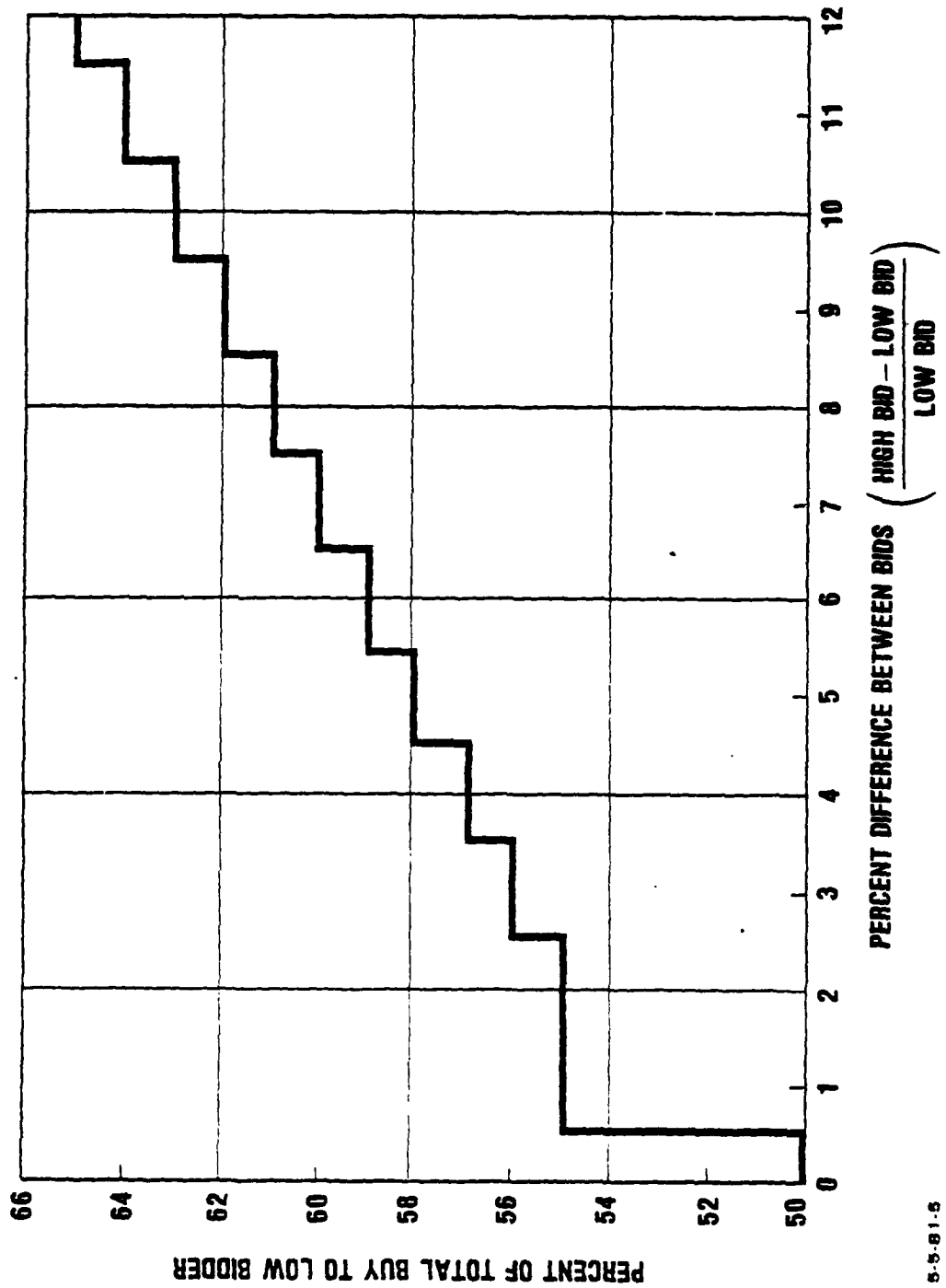
— 11.5%-12% PRICE DIFFERENCE ~ 65%-35% SPLIT

— 0%-0.5% PRICE DIFFERENCE ~ 50%-50% SPLIT

— FOR A GREATER THAN 12% PRICE DIFFERENCE, GOVERNMENT MAY REQUEST SUBMISSION OF DD633
COST/PRICE DATA

* Adjusted for GFE and royalties payable for previously accepted value engineering changes.
5-5-81-4

**SPLIT AWARD METHODOLOGY:
DETERMINATION OF AWARD AMOUNT FROM THE ACB'S DIFFERENCE**



5-5-81-5

GAU-8/A ACQUISITION HISTORY:

PERCENT OF TOTAL SPLIT AWARD PROCUREMENT TO EACH CONTRACTOR

FISCAL YEAR OF COMPETITION	AOC'S % SHARE	HW'S % SHARE
1976	60	40 (ON SUBCONTRACT TO GE)
1977	58	42 (AF ASSUMES MANAGEMENT)
1978	44	56
1979	64	36
1980	3-YEAR MULTI- YEAR	DETERMINED BY A LOGARITHMIC SPLIT AWARD METHODOLOGY
1981		
1982		

Source: USAF: ASD, Letter of 8 February 1980; USAF, A-10 Document No. K-102.

5-5-81-8

**GAU-8/A AMMUNITION PRICE-QUANTITY PROCUREMENT DATA AND
ESTIMATED PROGRESS FUNCTION FOR THE AEROJET ORDNANCE COMPANY**

LEAST SQUARES EQUATION: $C_n = \$1182.50n - 0.329$ ($S = 79.6$ percent) $R^2 = 0.93$				
FISCAL YEAR	CONTRACT QUANTITY (THOUSANDS OF ROUNDS)	ACTUAL ^a AVERAGE PRICE (1973 DOLLARS)	ESTIMATED AVERAGE PRICE	TYPE OF CONTRACT
1975	467.5	\$19.13	\$20.22	FPI
1976	836	13.72	13.01	FPI
1977	2,860	7.21	8.99	FPI
1978	4,534	5.60	6.74	FP
1979	7,063	4.38	5.79	FP
1980	6,088	4.63	4.73	FP-MULTI-YEAR
1981	4,021	4.61	4.37	FP-MULTI-YEAR
1982	4,021	4.66	4.26	FP-MULTI-YEAR

^aPrices adjusted for changes in GFM and CFM, 1980-1982.

Source: USAF: AFSC, Price Memorandum letter of February 8, 1980.
6-5-81-15

**GAU-8/A PRICE-QUANTITY PROCUREMENT DATA AND THE ESTIMATED
PROGRESS FUNCTION FOR THE HONEYWELL CORPORATION**

LEAST SQUARES EQUATION: $C_n = \$931n^{-0.32}$ (S = 80 percent) $R^2 = 0.921$				
FISCAL YEAR	CONTRACT QUANTITY (THOUSANDS OF ROUNDS)	ACTUAL ^a AVERAGE PRICE (1973 DOLLARS)	ESTIMATED AVERAGE PRICE	TYPE OF CONTRACT
1976	550	\$23.86	\$16.96	FPI
1977	1,832	8.98	9.91	FPI
1978	3,563	5.86	7.74	FP
1979	3,803	5.62	6.06	FP
1980	4,748	5.30	5.22	FP-MULTI-YEAR
1981	3,159	5.11	4.66	FP-MULTI-YEAR
1982	3,159	5.09	4.38	FP-MULTI-YEAR

^aPrices adjusted for change in GFM to CFM, 1980-1982.

Source: USAF: AFSC, Price Memorandum letter of February 8, 1980.

5-5-81-14

SIGNIFICANT ASPECTS OF CONTRACTOR PERFORMANCE

THERE HAS BEEN A 75% REDUCTION IN AVERAGE UNIT COST BETWEEN 1975 AND THE
CURRENT MULTI-YEAR BUY (MEASURED IN 1973 DOLLARS)

DTC GOALS WERE DELETED FROM CONTRACTS IN 1978, BUT (IN 1973 DOLLARS)
CONTRACTOR PERFORMANCE HAS EXCEEDED THE GOALS

TYPE OF ROUND	INITIAL DTC GOALS	ACHIEVED
TP	\$ 5.50	\$3.00
HEI	7.30	4.00
API	\$11.80	6.30

THE SOURCES OF UNIT COST REDUCTION

VARIATIONS IN PRODUCT DESIGN HAVE NOT BEEN AN IMPORTANT SOURCE OF SAVINGS:

- ONLY 5 VALUE ENGINEERING CHANGES TO DATE**
- 82 CHANGE ORDERS FOR AOC AND 50 FOR HW**
- OVER 50% OF DESIGN CHANGES INITIATED AT USAF REQUEST**

NO SIGNIFICANT CONTRACTOR INVESTMENT IN NEW PRODUCTION EQUIPMENT

**CONCLUDE: MAJOR SOURCES OF COST REDUCTION DUE TO MANY SMALL IMPROVEMENTS
IN SCHEDULING, MATERIAL HANDLING, EMPLOYEE LEARNING**

SIGNIFICANT FACTORS IN EXPLAINING COST REDUCTION:

AOC RELIED UPON VERTICAL INTEGRATION TO DEVELOP SOURCES OF SUPPLY:

- ACQUIRED DU PROCESSING AND FABRICATION FACILITIES**
- CONSTRUCTED ITS OWN LAP FACILITY**
- 55% OF UNIT COST IS FOR SUBCONTRACTED ITEMS**

HW RELIED UPON SUBCONTRACTORS TO CREATE A PRODUCTION TEAM:

- EXTENSIVE USE OF GOVERNMENT OWNED FACILITIES AND EQUIPMENT**
- 55% OF UNIT COST IS FOR SUBCONTRACTED ITEMS; IT WAS AS HIGH AS 70%**

AOC HAS A SUBCONTRACTOR "BUY OUT" WITH THE FIRST COMPETITION; HW WAITED UNTIL THE MULTI-YEAR PROCUREMENT TO HAVE A BUY OUT

COMPARATIVE COSTS OF SMALL CALIBER AMMUNITION

BUSHMASTER 25 mm CARTRIDGE (HARDWARE COST ONLY; FISCAL YEAR 1980 BUY) ^a	
APDS ROUND	COST/ROUND
HEI	\$44.31
TP	36.93
	26.10
PHALANX 20 mm CARTRIDGE (FISCAL YEAR 1980 BUY) ^b	15.00
ARRCOM MANAGED ROUNDS ^c	
20 mm CARTRIDGE TP LKD M220	4.774
25 mm CARTRIDGE HEI-T XM792	47.273
30 mm CARTRIDGE HEDP M789 (ADEN/DEFA)	55.676
GAU-8/A ROUNDS (AVERAGE PRICES, FISCAL YEAR 1980 BUY) ^d	
API	14.70
HEI	12.00
TP	7.70

Sources: ^a DAMA, Ammunition Procurement Office.

^b Navy Phalanx Project Office.

^c Mr. Jim Spangler, ARRCOM.

^d USAF: AFSC, Price Memorandum of February 8, 1980.

5-5-81-16

SHORT RANGE RECOVERY (SRR) HELICOPTER
MANAGEMENT/PROCUREMENT CONSIDERATIONS

1. MAINTAIN EXISTING HELICOPTERS

- HH-52A PRODUCTION (1963/68) 170 AIRCRAFT
99 PROCURED BY C.G.
- AT PRESENT 25 COMMERCIAL IN OPERATION
- EXCESSIVE COST FOR SPARE PARTS
- EXCESSIVE LEAD TIME FOR SPARES
- FLIGHT CONTROLS/DYNAMIC COMPONENTS DESIGNED IN LATE 1940's
- C.G. AIRCRAFT ATTRITION RATE - 1 PER YEAR (CRASH DAMAGE)
- FUNDED FOR 10 HELO'S FOR SUPPORT FISHERIES CONSERVATION
ACT (1978)

2. MIXED SRR FLEET

SAME PROBLEMS OUTLINED IN 1 TOGETHER WITH:

- C.G. LIMITED RESOURCES
- DUPLICATION OF TRAINING
- DUPLICATION OF SPARES
- DUPLICATION OF GROUND SUPPORT
- DUPLICATION OF DEPOT REPAIR FACILITIES

3. PROCUREMENT OF DOD HELICOPTER

DOD INVENTORY --

- EXCESSIVE WEIGHT FOR C.G. SHIPS
- LIMITED RANGE OF OPERATION

4. DEVELOP NEW SYSTEM

LIMITED RESOURCES

- EXCESSIVE DEVELOPMENT/PRODUCTION COST (SPREAD OVER ONLY 90 A.C.)
- TIME DELAY - 5 YEARS TO PRODUCTION

5. IN PRODUCTION COMMERCIAL SYSTEM

RESEARCH REVEALED AT LEAST 4 IN PRODUCTION AIRCRAFT THAT APPEARED TO MEET OUR OPERATIONAL NEEDS. COMMERCIAL MODELS USED TO SUPPORT OFFSHORE OIL PRODUCTION PERFORMED FUNCTIONS SIMILAR TO THOSE REQUIRED BY C.G. THIS ALTERNATIVE REPRESENTED THE LOWEST TECHNICAL AND COST RISK. THE EXPECTED WIDE COMMERCIAL APPLICATION DECREASED THE RISK OF A SHORT ECONOMIC SERVICE LIFE WITH ASSURANCE THAT ADEQUATE SPARES AND SUPPORT WOULD BE AVAILABLE TO COVER THE SERVICE LIFE OF THE SRR. BENEFITS WERE:

- FLY BEFORE BUY
- HIGH COMMERCIAL BASE/LOW COST
- LOGISTICS SUPPORT
- PRESENT DAY TECHNOLOGY
- FAA CERTIFIED

6. METHOD OF PROCUREMENT SELECTED

COMPETITIVE PROCUREMENT OF A COMMERCIAL AIRCRAFT MODIFIED TO MEET C.G. NEEDS -- MULTI-YEAR (5 YEAR) CONTRACT COVERING THE TOTAL C.G. REQUIREMENT FROM ONE MANUFACTURER.

SPECIFICATION DEVELOPMENT
SHORT RANGE RECOVERY (SRR) SYSTEM

- MISSION NEEDS
 - SEARCH AND RESCUE
 - ENFORCEMENT OF LAWS AND TREATIES
 - AIDS TO NAVIGATION
 - COMMERCIAL VESSEL SAFETY
 - PORT SAFETY AND SECURITY
 - ICE OPERATIONS
 - MILITARY OPERATIONS
- TWIN ENGINE DUE TO OFFSHORE ENVIRONMENT
- MINIMUM CRUISE SPEED OF 100 KNOTS
- RANGE OF 400 N.M. WITH RADIUS OF ACTION:
 - 150 MILES FROM OPERATING BASE
 - REMAIN ON SCENE FOR 30 MINUTES
 - RETURN TO BASE WITH FUEL RESERVE OF 20 MINUTES
- PASSENGER CAPACITY OF 6
- 600 POUND RESCUE HOISE
- CARGO SLING OF 2000 POUNDS CAPACITY
- AVIONICS PACKAGE TO PROVIDE NAVIGATION, COMMUNICATION AND DETECTION CAPABILITIES
- GROSS WEIGHT LIMIT OF 10,000 POUNDS

THE ABOVE MINIMUM PERFORMANCE CHARACTERISTICS WERE USED AS THE FOUNDATION OF THE TECHNICAL SPECIFICATIONS/DESCRIPTIONS USED IN THE RFP.

USING THE MINIMUM MISSION PERFORMANCE CHARACTERISTICS, THE C.G. DEVELOPED DETAILED SPECIFICATIONS.

THE RFP DRAFT SPECIFICATION (9 VOLS.) WAS ISSUED FOR INDUSTRY COMMENT WITH SPECIFICATIONS ADJUSTED AS A RESULT OF THE COMMENTS RECEIVED.

THE RFP REQUIRED A DETAILED TECHNICAL PROPOSAL WHICH, ON PAPER, DEMONSTRATED COMPLIANCE WITH THE SPECIFICATIONS.

AS A PART OF THE EVALUATION PROGRESS, THE C.G. CONDUCTED A FLIGHT EVALUATION OF THE PARENT AIRCRAFT PROPOSED TO CONFIRM POTENTIAL COMPLIANCE WITH THE GOVT SPEC/CONTRACTOR PROPOSAL.

THE CONTRACTOR WAS REQUIRED TO PROVIDE DETAILED SPECIFICATIONS/ DRAWINGS ON C.G. MODIFICATIONS TO COMMERCIAL AIRCRAFT.

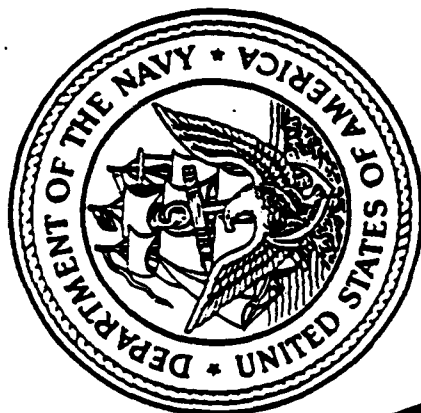
RFP EVALUATION CRITERIA PROVIDED FOR SELECTION OF BEST TECHNICAL AIRCRAFT.

RIGHTS TO ALL TECH DATA PREDETERMINED.

**AIRBORNE
SELF PROTECTION
JAMMER ALQ-165**

**PRESENTATION FOR:
OFFICE OF
FEDERAL PROCUREMENT
POLICY**

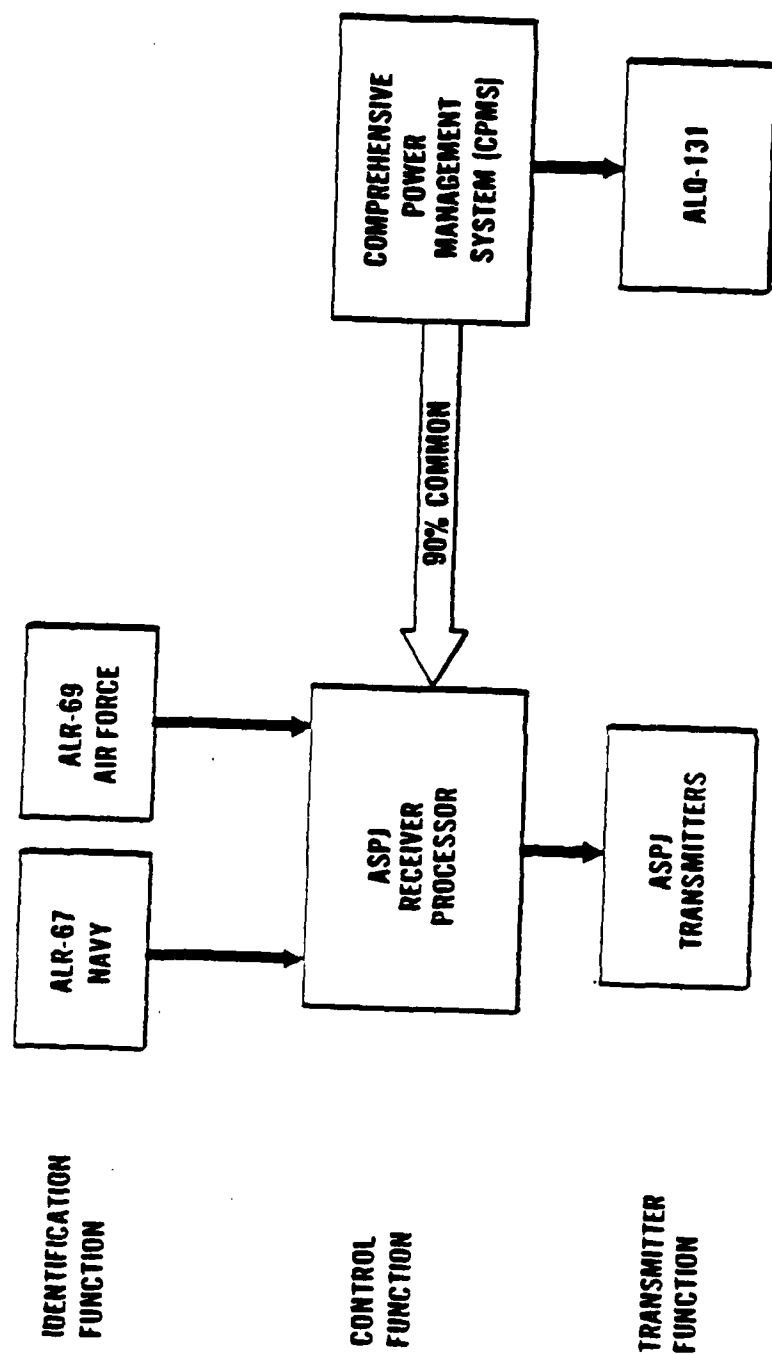
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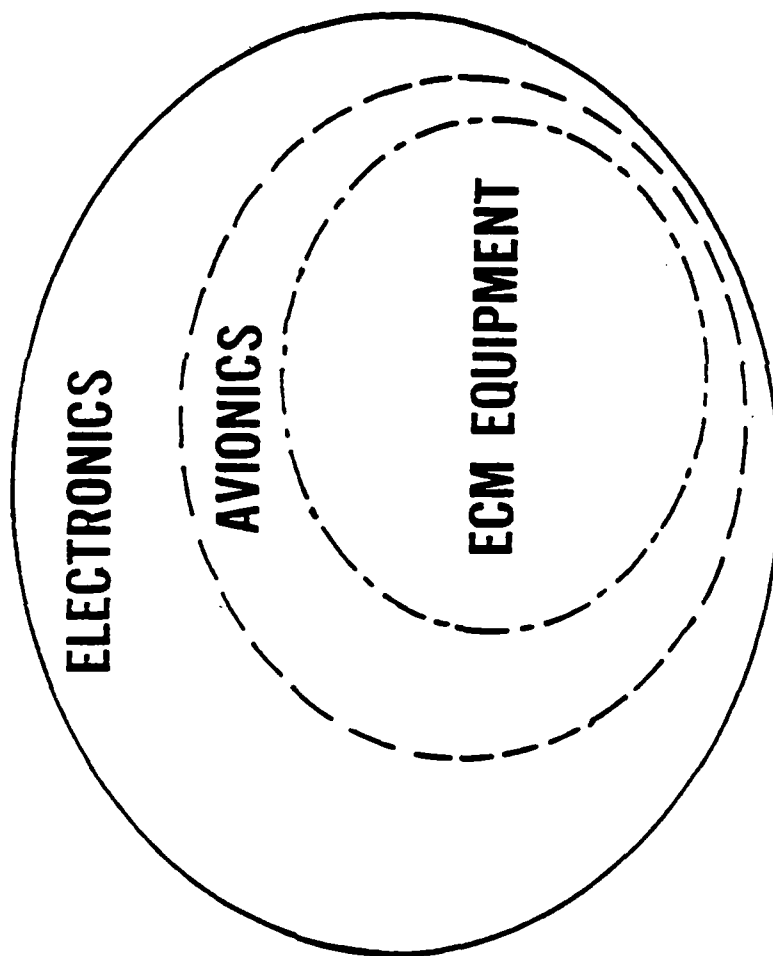
12. Captain Walter Carlson,
US Navy

**BRIEFER:
CAPT W.G. CARLSON USN
PROJECT MANAGER**

NAVY AND AIR FORCE COMMONALITY



TECHNOLOGY CATEGORIES



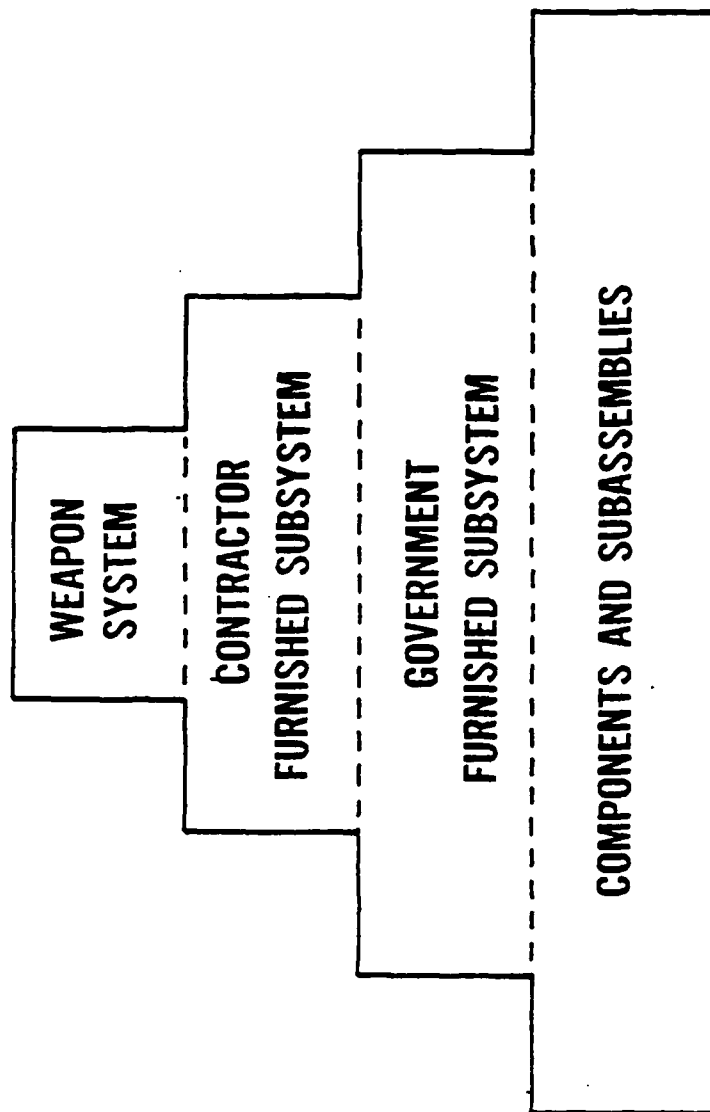
UNCLASSIFIED

ELECTRONIC WARFARE TECHNICAL DEVELOPMENTS CHARACTERIZED BY

- INTELLIGENCE DEPENDENCE
- TIME VARYING REQUIREMENTS
- GOVERNMENT THREAT SIMULATIONS
- SUBSYSTEM OF MAJOR WEAPON SYSTEMS
- CHALLENGING FORM/FIT/POWER/COOLING
- VERY HIGH TECHNOLOGY
- COMPONENT DEVELOPMENTS
- REAL TIME DIGITAL SYSTEM CONTROL
- REAL TIME DATA PROCESSING
- HIGH PRODUCTION RATES

UNCLASSIFIED

DEVELOPING COMPETITION



UNCLASSIFIED

CASE FOR GFE

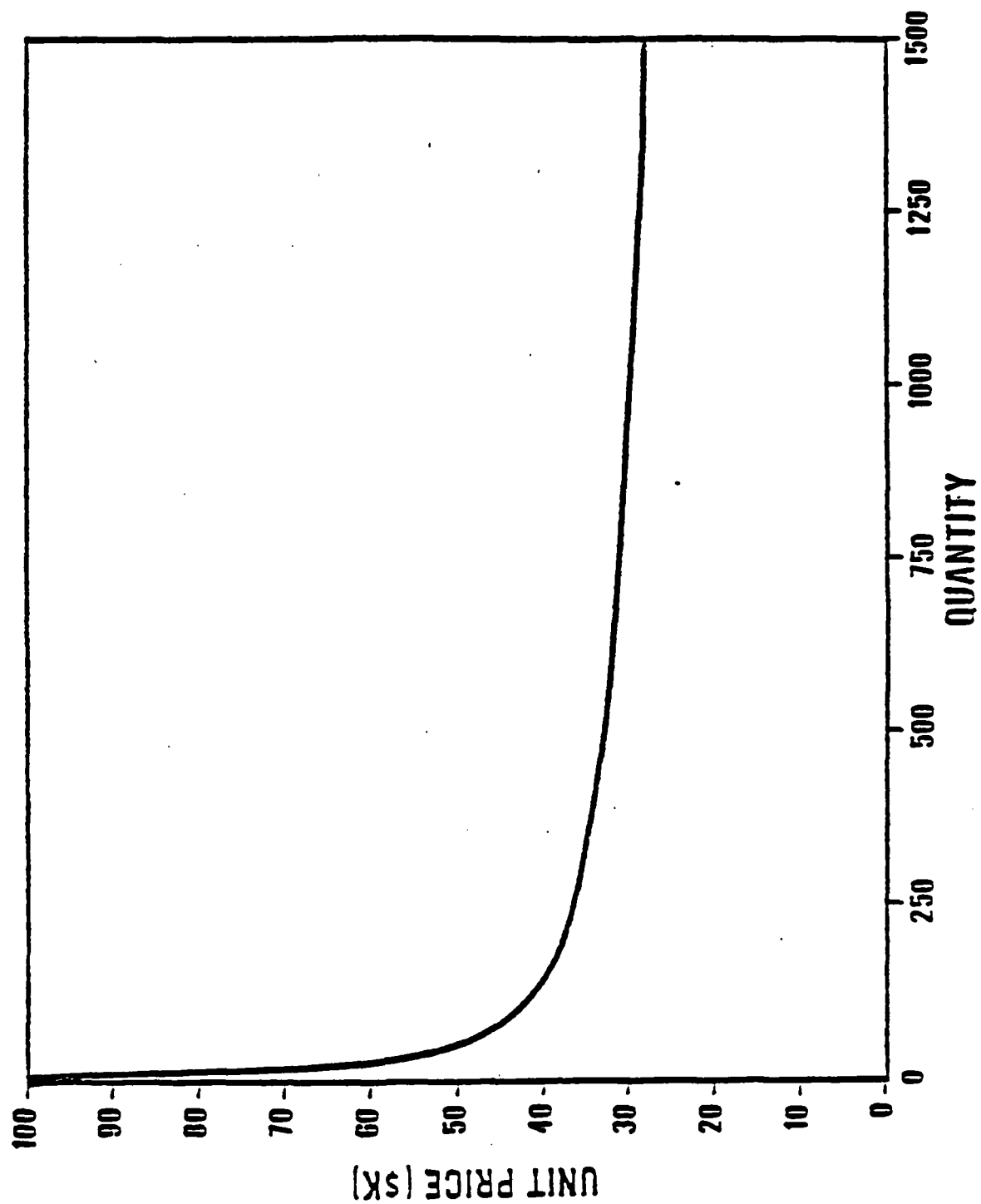
- **REDUCED**

- **R&D COST**
- **ACQUISITION COST**
- **SUPPORT EQUIPMENT COST**
- **SPARES COST**
- **MANPOWER**

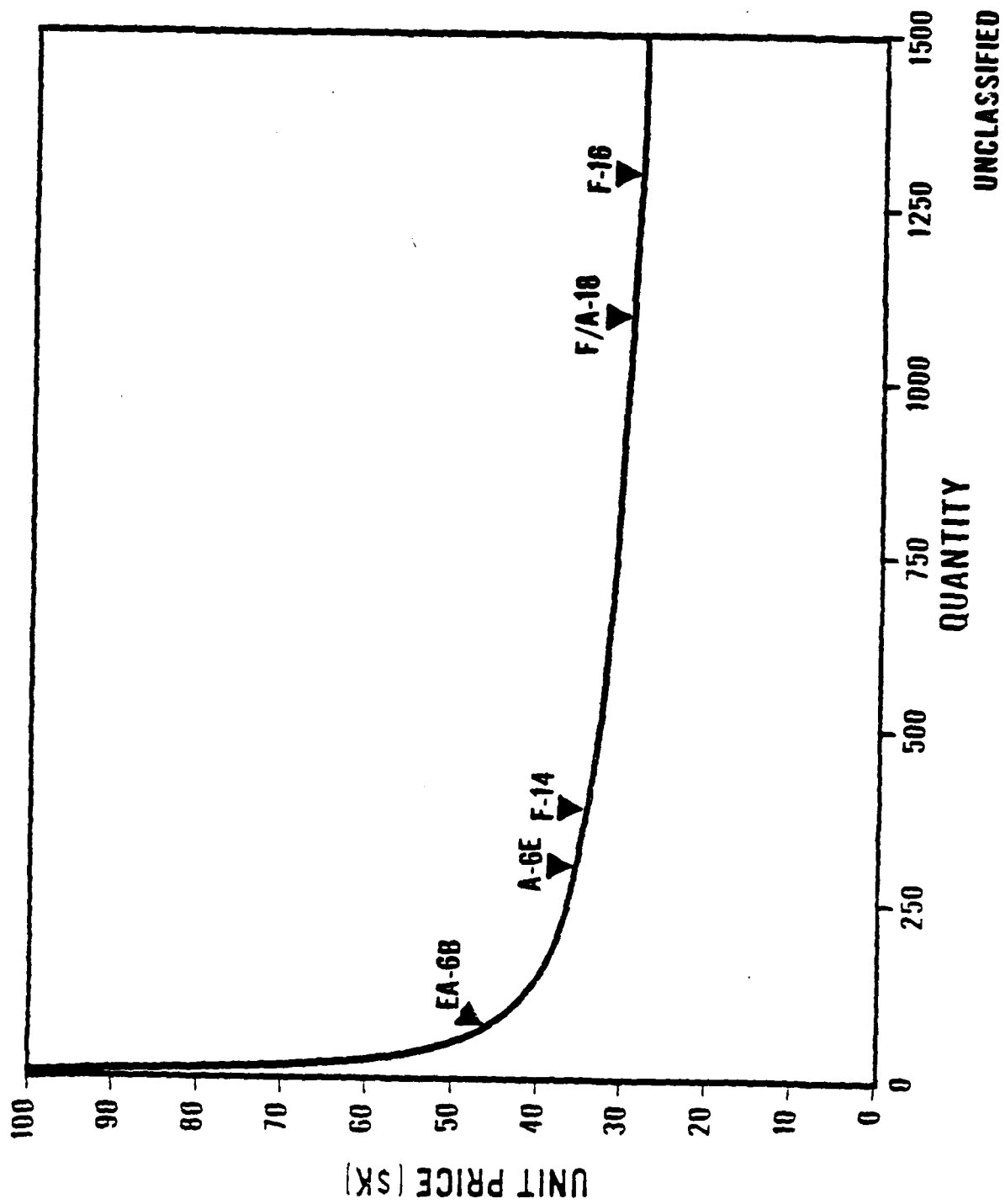
- **INCREASED**

- **WEAPON SYSTEM INTEGRATION**
- **INTERFACES**

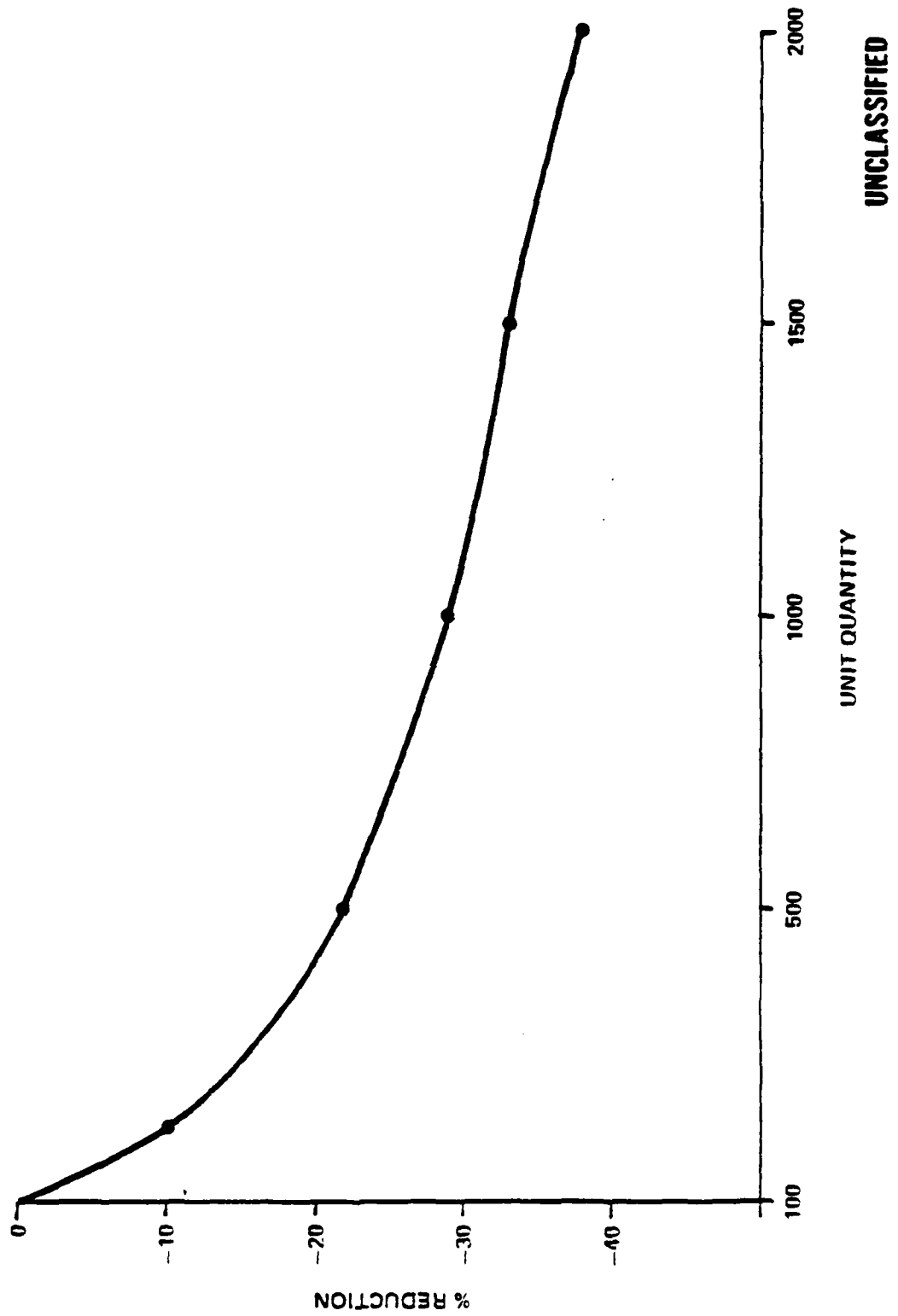
PRODUCTION LEARNING CURVE



PRODUCTION LEARNING CURVE



COST REDUCTION



GFE CANDIDATES

- **HIGH UNIT COST**
- **LARGE PRODUCTION RUNS**
- **LITTLE WEAPON SYSTEM INTEGRATION**
- **COMPLEX COMMON SUPPORT**
- **REPAIRABLES vs CONSUMABLES**

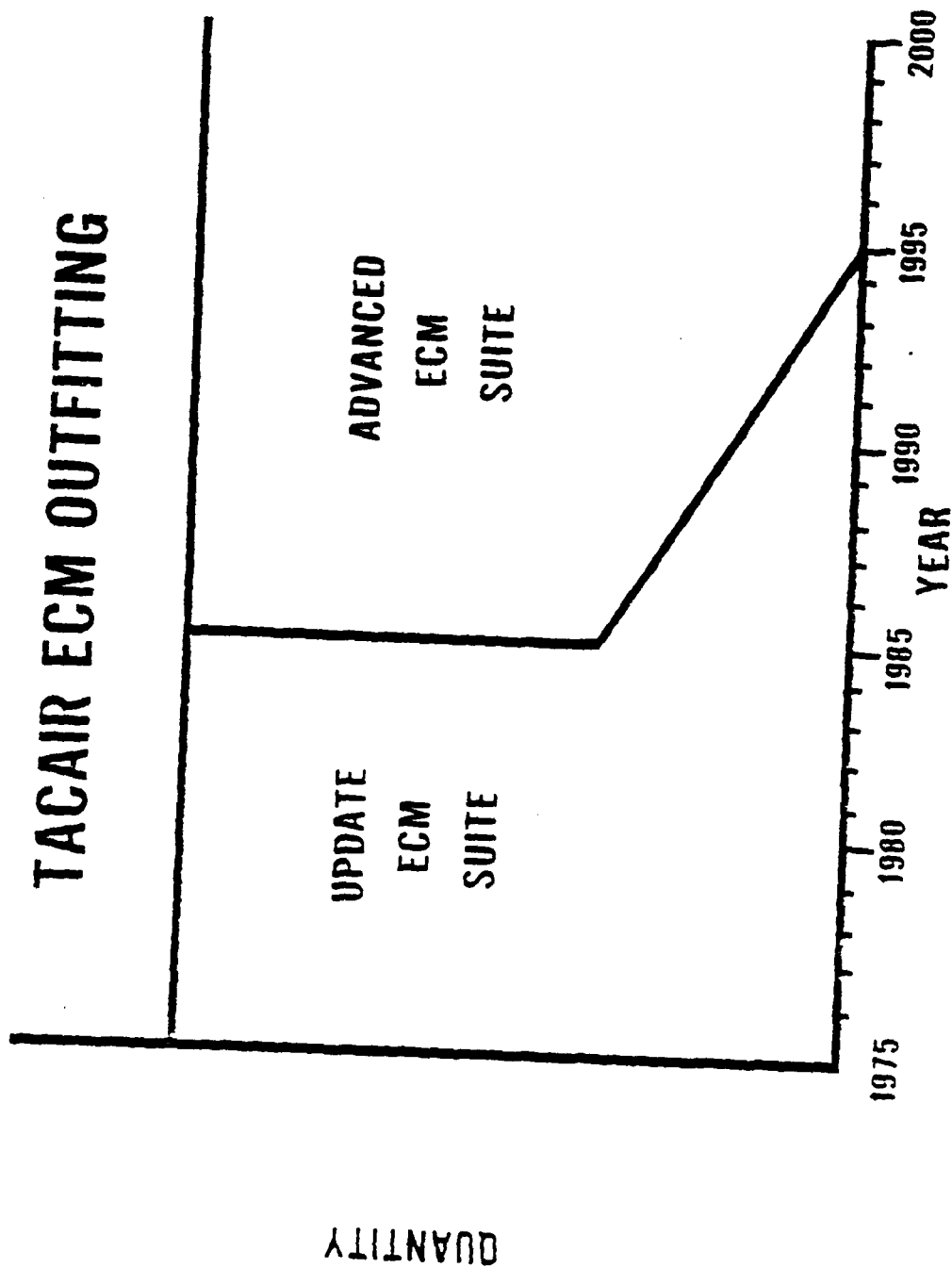
UNCLASSIFIED

PROGRAM STRUCTURING

- MISSION NEED
- ACQUISITION STRATEGY
 - PROGRAM CONSIDERATIONS
 - TECHNICAL CONSIDERATIONS
 - BUSINESS CONSIDERATIONS

UNCLASSIFIED

TACAIR ECM OUTFITTING



TECHNICAL CONSIDERATIONS

- TECHNICAL ASSESSMENT
 - INDUSTRY
 - GOVERNMENT LABORATORIES
- RELIABILITY / MAINTAINABILITY
- SOFTWARE
- PERFORMANCE / FORM FACTOR / R&M TRADEOFFS
- RISK ASSESSMENT
- CRITICAL COMPONENT DEVELOPMENT
- ECM TECHNIQUES
- ADM FABRICATION / TEST
- COST CONTROL

SPECIFICATIONS

TECHNOLOGY ADVANCES

- **TRAVELING WAVE TUBES**
- **POWER SUPPLIES**
- **MICROWAVE INTEGRATED CIRCUITS**
- **MICROPROCESSORS**
- **PULSE TRAIN TRACKERS**
- **DIGITALLY TUNED OSCILLATORS**

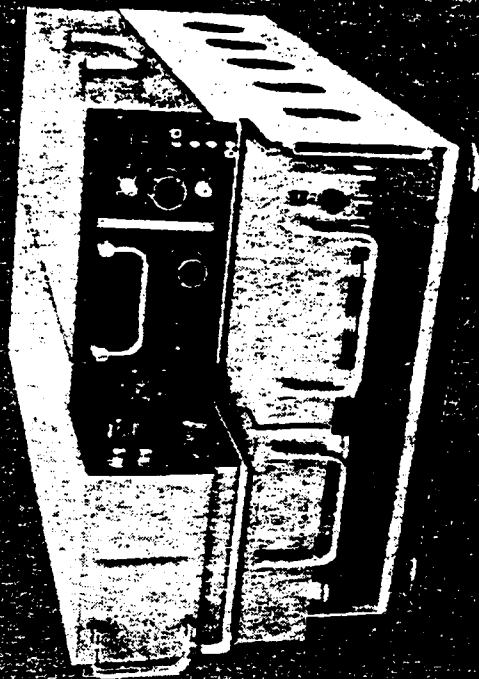
UNCLASSIFIED

COST CONTAINMENT

- **DESIGN TO COST**
- **CONSTRAIN SIZE**
- **FUNCTIONAL MODULARITY**
- **REDUCE HIGH COST COMPONENTS**
- **USE DIGITAL CIRCUITRY**
- **IMPROVE RELIABILITY**
- **COMPETITION**

ASPI BASIC SYSTEM

F-14/EA-6B



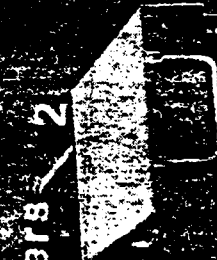
F-18/A-6E



WRA'S

Processor

Receivers 2



Low Band

High Band



4

Transmitters 4



Low Band

High Band

BUSINESS CONSIDERATIONS

- MARKET ANALYSIS
- PROGRAM COST PROJECTIONS
- INDUSTRIAL BASE
- PRODUCTION CAPACITY
- INCENTIVES
- SOURCE SELECTION CRITERIA
- PROGRAM FLEXIBILITY
- COST CONTROL

UNCLASSIFIED

PROSPECTIVE SOURCES

COMPANIES WITH AIRBORNE ACTIVE/PASSIVE DECM EXPERIENCE:

- ★ AIL
- ★ ITT
- ★ NORTHROP
- ★ RAYTHEON (GOLETA)/KURAS-ALTERMAN
- ★ SANDERS
- ★ WESTINGHOUSE
- ★ LORAL
- ★ HUGHES
- MOTOROLA
- GENERAL ELECTRIC

OTHER INTERESTED COMPANIES:

- ATD/ITEK
- DALMO VICTOR
- GENERAL INSTRUMENTS
- IBM
- TEXAS INSTRUMENTS
- ★ TASKER

★ ASPJ COMPETITORS

UNCLASSIFIED

ASPJ ACQUISITION STRATEGY

- **DESIGN COMPETITION**
- **RISK REDUCTION PROVISIONS**
- **HIGH INITIAL PRODUCTION RATE**
- **SUSTAINED COMPETITION IN PRODUCTION**

UNCLASSIFIED

COMPETITION DOES....

- **VITALIZE THE INDUSTRIAL BASE**
- **FOCUS TECHNICAL TALENT**
- **FACILITATE TECHNICAL CHANGE**
- **FOSTER THE "ILITIES"**
- **PUT TEETH IN DESIGN-TO-COST**
- **LOWER PRODUCTION COST**
- **MODERATE PRODUCTION RISK**
- **REDUCE GOVERNMENT SURVEILLANCE**

UNCLASSIFIED

JOINT NAVY / AIR FORCE
ASPJ ACQUISITION SCHEDULE
(FISCAL YEARS)

**ADVANCED
DEVELOPMENT**

1970-1978

▲
OSD PROGRAM REVIEW

FULL SCALE DEVELOPMENT

DESIGN

1979-80

▲
DSARC II

▲
OSD PROGRAM REVIEW

FABRICATE AND TEST

1981-1984

▲
DSARC III

PRODUCTION

1985-1989

UNCLASSIFIED

FULL SCALE DEVELOPMENT PROGRAM

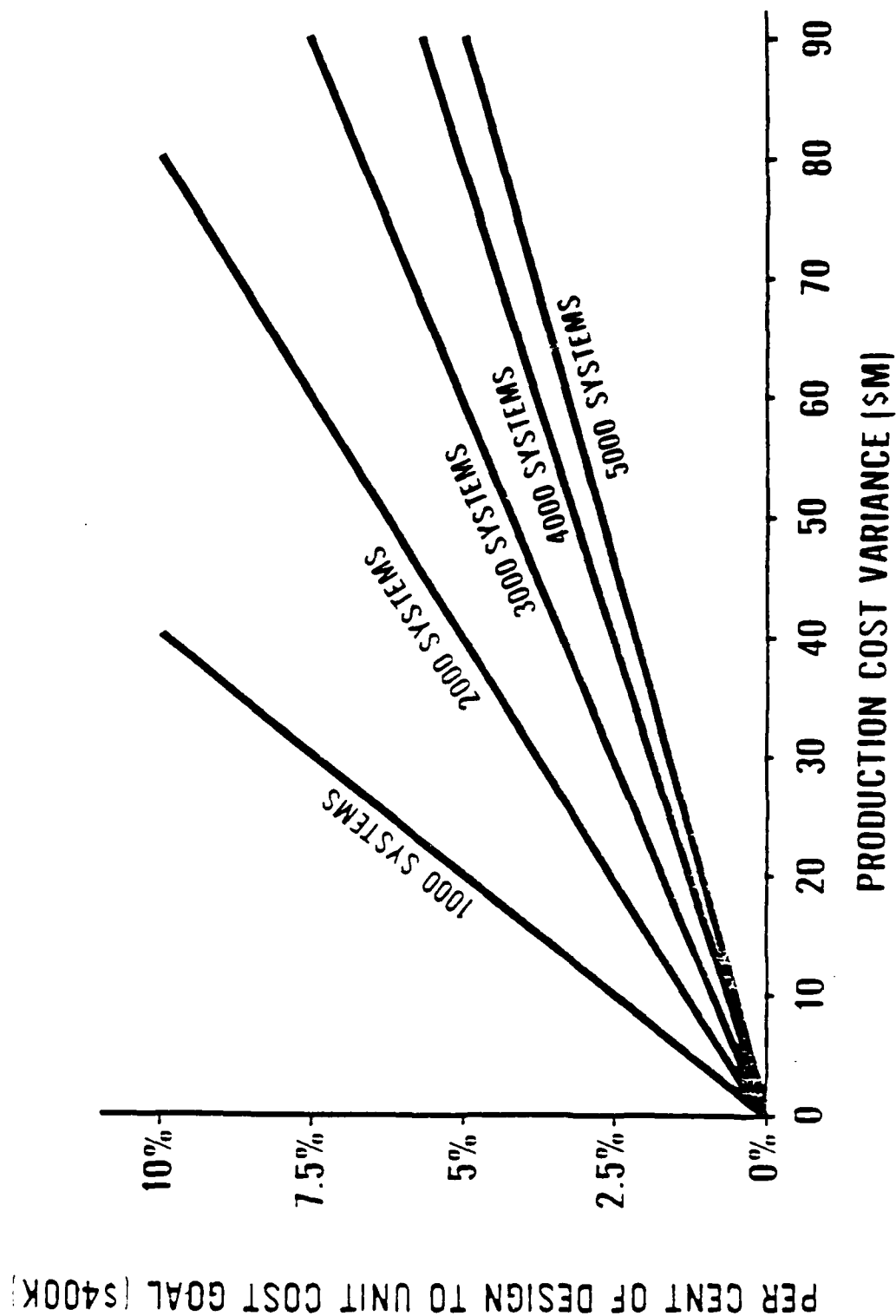
● PHASE I

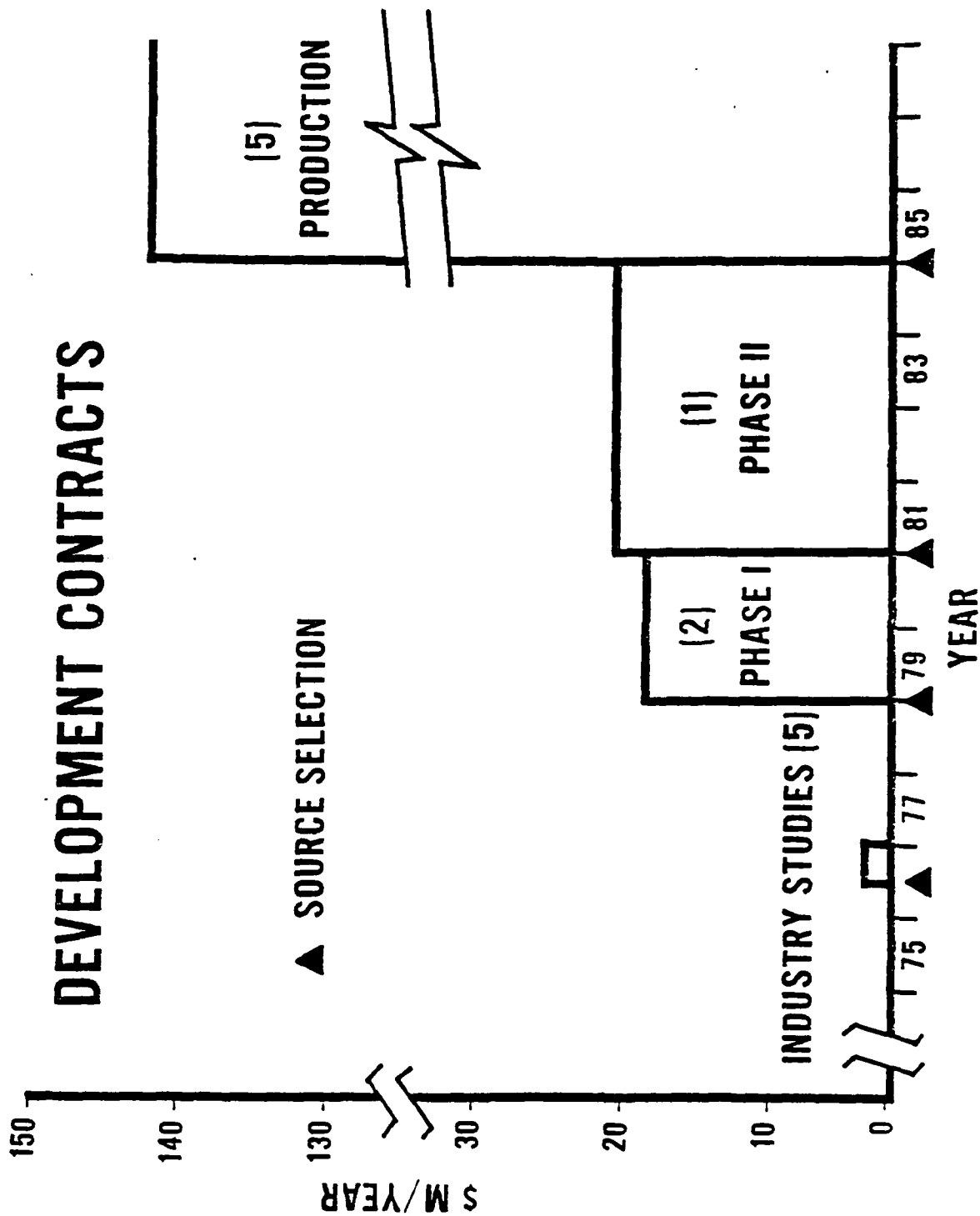
- DESIGN COMPETITION**
- CRITICAL ITEM DEMONSTRATION**
- RISK ASSESSMENT**

● PHASE II

- FABRICATION OF ASPJ HARDWARE**
- QUALIFICATION TESTS**
- TAAF**
- RELIABILITY / MAINTAINABILITY DEMONSTRATION**
- DETAILED WEAPON SYSTEM INTEGRATION**
- TEST AND EVALUATION**

UNIT COST VARIANCE vs PRODUCTION COST VARIANCE

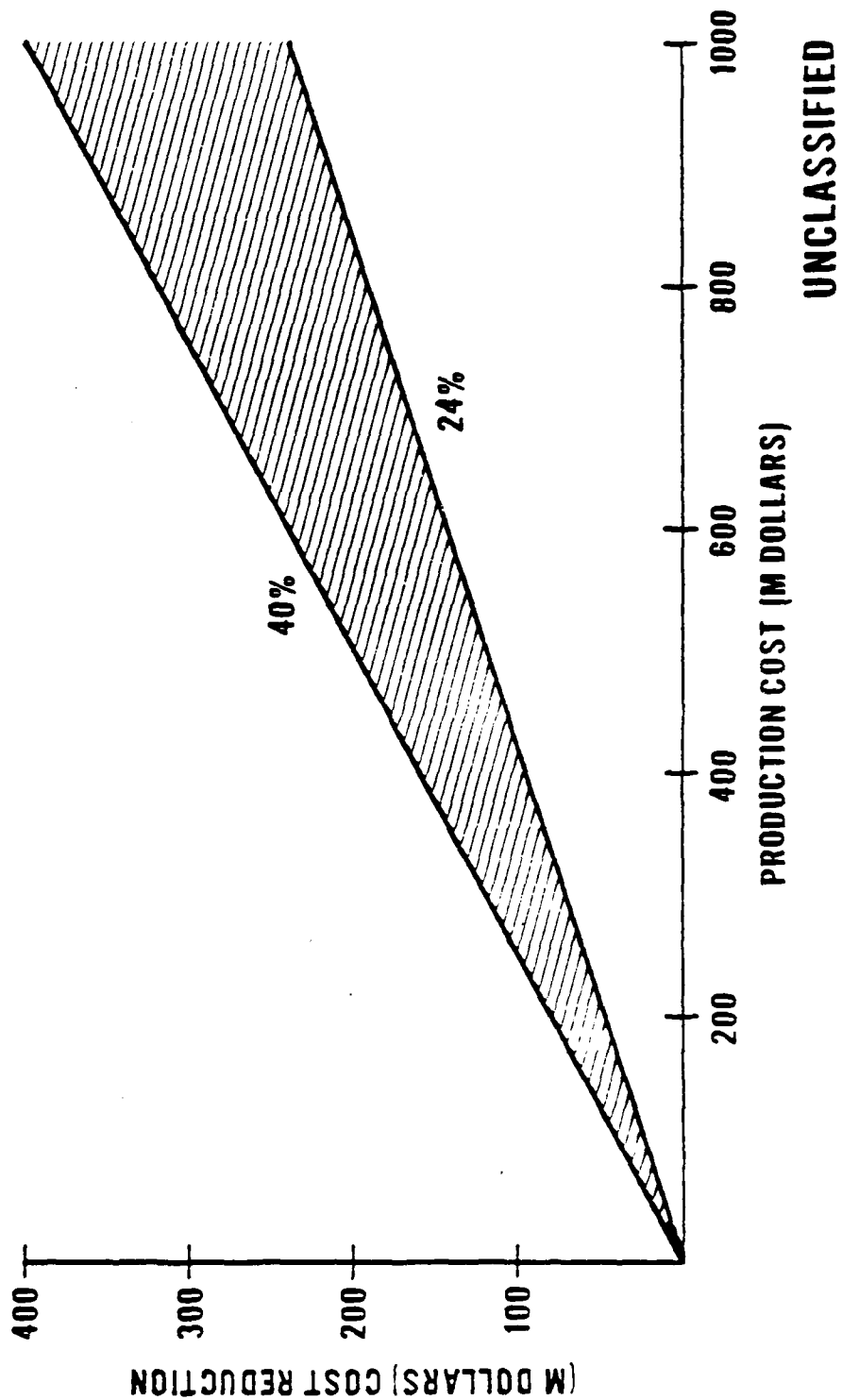




MULTIPLE SHORT TERM CONTRACTS

- **ADVANTAGES**
 - MAXIMIZES INDUSTRIAL INVOLVEMENT
 - ALLOWS RELEASE OF INTELLIGENCE DATA
 - DEMONSTRATES GOVERNMENT COMMITMENT
 - NARROWS THE FIELD FOR SOURCE SELECTION
 - MAINTAINS COMPETITIVE ENVIRONMENT
 - ALLOWS FOR TWO WAY EXCHANGE OF TECHNICAL DATA
- **STRUCTURE TRADEOFFS**
 - NUMBER OF CONTRACTS
 - INDIVIDUAL CONTRACT COST
 - CONTRACT TERM
- **DISADVANTAGES**
 - BUREAUCRATIC LEAD TIME
 - SOURCE SELECTION BURDEN

COMPETITIVE ADVANTAGE



ASPJ TEAM CONSIDERATIONS

● GOVERNMENT CONCERN

- INDUSTRY CAPABILITY TO MEET DELIVERIES
ON SOLE SOURCE BASIS

● GOVERNMENT OBJECTIVES

- MAINTAIN ADEQUATE INDUSTRIAL BASE
- HIGH INITIAL PRODUCTION RATE
- COMPETITION IN PRODUCTION

● POSSIBLE CONTRACTOR CONCERNS

- REVEALS PROPRIETARY TECHNOLOGICAL INFORMATION
- BURDEN RATE INCREASES R&D COSTS

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ASPJ TEAMING CONSIDERATIONS

- 1. TWO-CONTRACTOR TEAMING
ARRANGEMENT**
- 2. LEADER-FOLLOWER
(LEARNER) ARRANGEMENT**

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LEADER-FOLLOWER ARRANGEMENT

- SINGLE CONTRACTOR PROPOSALS
- WINNER COMPLETES EDM PHASE
- WINNER'S PILOT LINE CONFIRMS DESIGN
- GOVERNMENT LETS LEARNER CONTRACT (TOKEN BUY)
- FOLLOWER BUILDS TO WINNER DESIGN
- COMPETITION AFTER FIRST PRODUCTION BUY

UNCLASSIFIED

PRIMARY--ALTERNATE ARRANGEMENT

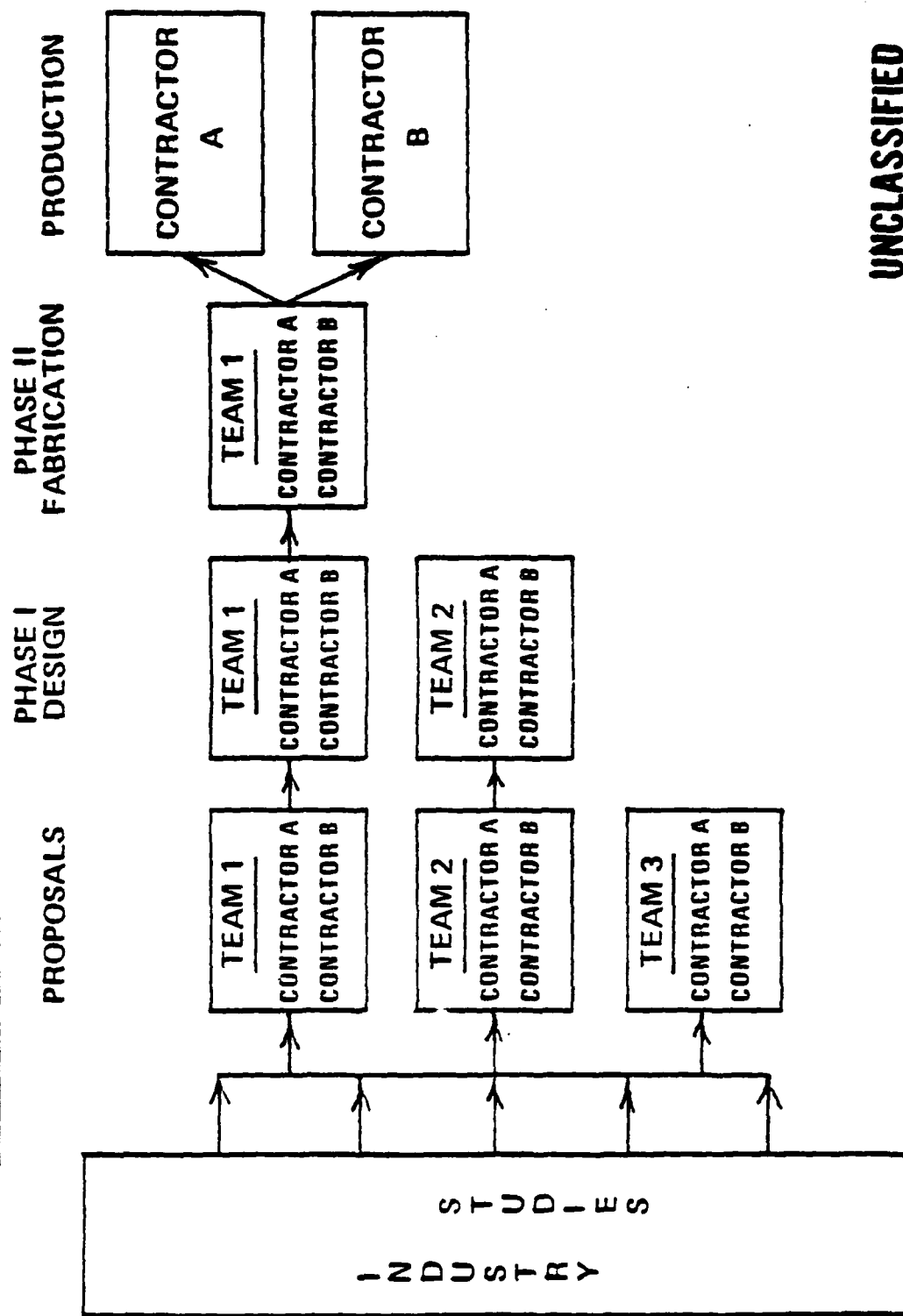
- QUOTE INDEPENDENTLY FOR EDM PHASE
- GOVERNMENT SELECTS TWO IN PARALLEL FOR EDM DESIGN
- CDR (OR OTHER EVENTS) ESTABLISHES WINNER
- GOVERNMENT SELECTS ALTERNATE
- PRIME BRIEFS ALTERNATE
- ALTERNATE QUOTES TO PRIME
- BOTH SHARE PRODUCTION AWARDS (COMPETITIVE SPLIT)

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TWO CONTRACTOR TEAMING ARRANGEMENT COMPETITIVE TEAMING

- **TEAM FORMED BY INDUSTRY COMPANIONS**
- **SINGLE ENTITY PROPOSAL**
- **MUTUALLY SUPPORTING**
- **TWO TEAMS COMPETE TO SELECTION EVENT**

COMPETITIVE TEAMING



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TEAMING ADVANTAGES

IMPROVED SYSTEM

- SYNERGISTIC DEVELOPMENT
- WIDER RANGE OF AVAILABLE TECHNOLOGIES

LOWER DEVELOPMENT RISK

- BROADER BASE
- BETTER DESIGN REVIEW

MIN COST TO ACHIEVE FULLY QUALIFIED PRODUCTION COMPETITION

COOPERATIVE DEVELOPMENT

TEAMING BY EQUALLY COMPETENT CONTRACTORS

NO A PRIORI DESIGN DIVISION

JOINT ENGR. TEAM SYSTEM DESIGN

- **BASED ON PREVIOUS DESIGN AND TEST DATA**
- **(EXISTING SYSTEMS, LWLC, DMJ, AND IR&D PROGRAMS)**
- **ARBITRATION PROCEDURES/MANAGEMENT REVIEW**
- **PROPOSAL STUDY/OPTIONS**

EQUALIZED DESIGN RESPONSIBILITY ASSIGNMENT

- **DIVISION BY RELATED EXPERIENCE**
- **DIVISION BY DEVELOPMENT COST**
- **DIVISION BY TECHNOLOGY LEVEL**

BALANCE FACTOR: LARGE PERCENTAGE OF "NEUTRAL" AREAS

ACHIEVING MUTUAL MANUFACTURING CAPABILITY

JOINT SYSTEM DESIGN

DESIGN TO COMMON MFR STANDARDS

- **COMPATIBLE MFR BASE**
- **UPGRADING WHERE NEEDED**

SPLIT EDM FABR. IN CRITICAL AREAS

SPLIT EDM SYSTEM ASSEMBLY AND TEST

COST REDUCTIONS

DESIGN COMPETITION	<u>M\$</u>
PRODUCTION COMPETITION	70
QUANTITY	320
FUNCTIONAL MODULARITY	325
RELIABILITY	200
SUPPORT EQUIP	272
	70
	<hr/>
	1,257.0

UNCLASSIFIED

SUMMARY

- LOW RISK
- OPERATIONALLY EFFECTIVE
- COST EFFECTIVE
- HIGH VOLUME PRODUCTION
- WIDE INDUSTRIAL INVOLVEMENT
- COMPETITION
- TAILORED ACQUISITION STRATEGY

UNCLASSIFIED

13. John Talley, US Air Force

COMPETITION
IN THE
ALR-67/69 UPDATE PROGRAM

NEEDS

DETECT ADDITIONAL THREATS

OPERATE IN DENSE THREAT ENVIRONMENT

DECREASE RESPONSE TIME

INSTANTANEOUS FREQUENCY MEASUREMENT

IMPROVED SENSITIVITY

CAPABILITY - 1984

FACTORS

.USE EXISTING HARDWARE

..AN/ALR 67 (NAVY)

..AN/ALR 69 (AIR FORCE)

.SOLE SOURCE

..LACK OF DATA

.PROBLEM

..\$700 MILLION SOLE SOURCE

FIRST METHOD

PROTOTYPE AWARD - MAY 81
 . COMPLETE TESTING - APR 83
PRODUCTION AWARD - MAY 83
 . ACQUIRE PRODUCTION DRAWINGS
PRODUCTION DRAWINGS
 . DELIVERY - JAN 85
 . GOVERNMENT REVIEW - JUL 85
COMPETITIVE ACQUISITION
 . AWARD JAN 86
 . FIRST ARTICLE DELIVERY - JUN 87
 .. GOVERNMENT REVIEW - SEPT 87
PRODUCTION TURN-ON
 .. DELIVER 1ST PRODUCTION - MAR 89
PROBLEM: PROGRAM BOUGHT OUT

SECOND METHOD

PROTOTYPE AWARD - MAY 81

.SELECT 2ND SOURCES - AUG 81

..OBSERVE

PROBLEM - SELECTION OF SOURCES

CONCEPT

1981

PROTOTYPE

- SOLE SOURCE
- • SECOND SOURCES

1983

INITIAL PRODUCTION

- SOLE SOURCE
- • 43% SECOND SOURCES

1984

FOLLOW - ON PRODUCTION

- COMPETITIVE

TOTAL PROGRAM - 85% COMPETITIVE

PROTOTYPE

PROTOTYPE

- 8 SETS FLIGHT HARDWARE
- 6 SETS OF MATERIAL
- SECOND SOURCING
 - • SOLICIT
 - • EVALUATE
 - • PREPARE SUBCONTRACTS

PHOTOTYPE TESTING

- INTEGRATION - OCT 82
- QUALIFICATION - NOV 82
- FLIGHT - JAN 83

PRODUCTION DECISION - APR 83

SECOND SOURCING

<u>EVENT</u>	<u>DATE</u>
* INDUSTRY BRIEFING	APR 81
PREPROPOSAL INVITATION	JUN
INDUSTRY BRIEFING	JUL
COMPILE SOURCE LIST	OCT
PRERARE SOLICITATIONS	DEC
* REVIEW SOLICITATIONS	MAR 82
ISSUE SOLICITATIONS	JUL
RECEIVE QUOTATIONS	JAN 83
EVALUATE QUOTATIONS	FEB
* REVIEW EVALUATION RESULTS	FEB
SELECT SECOND SOURCES	MAR
* REVIEW SUBCONTRACTS	MAY

* GOVERNMENT ACTIONS

INITIAL PRODUCTION

AWARD - MAY 83

• SUBCONTRACT (43%)

• • MAY 83

SUPPORT

SECOND SOURCES

- 4 SETS MATERIAL
- PROTOTYPE UNIT
- INTERMEDIATE TEST STATION

DELIVERY

1984

PROTOTYPE	M	A	M	NOV	D
CONTRACTOR:	1			2	3
SECOND SOURCE:	1	1	2		1

166

1985

PHOTOTYPE	J	F	M	A	M	J	J	A	S	O	N	D
CONTRACTOR:	5	6	7	8	10	12	14	16	18	20	22	25
SECOND SOURCE:	2	3	4	5	5	7	9	11	14	18	22	25

TESTING

INTEGRATION - FEB 84

PCA/FCA - MAR 84

FOLLOW-ON PRODUCTION

ISSUE REQUEST FOR PROPOSAL MAR 84

AWARD - 1,125 EACH (EST) AUG 84

EXERCISE OPTION

• FIRST - 737 EA (EST) AUG 85

• SECOND - 200 EA (EST) AUG 86

• THIRD - 120 EA (EST) AUG 87

• FOURTH - 63 EA (EST) AUG 88

METHOD

COMPETITIVE

SOURCES

- **SECOND SOURCES**
- **PROTOTYPE CONTRACTOR**

TYPE CONTRACT

- **INITIAL AWARD WITH PROCED OPTIONS**

EVENTS

	<u>DATE</u>
PROTOTYPE AWARD	
• SOLICITATION PREPARED *	DEC 81
• HARDWARE FABRICATED	JUL 82
SOLICITATION ISSUED *	JUL
• UPDATED DRAWING PACKAGE *	DEC
• PRODUCTION DECISION	APR 83
• SUBCONTRACTS REVIEWED *	MAY
INITIAL PRODUCTION AWARD	MAY
• SUBCONTRACTS AWARDED *	MAY
• DELIVERY START	FEB 84
• DELIVERY START *	MAR
FOLLOW-ON PRODUCTION	
• SOLICIT	MAR
• AWARD	AUG

* SECOND SOURCE EFFORT

HOW TO IMPROVE COMPETITION

- PURPOSE - TO SHARE VIEWS AND DIRECTIONS ON CONCEPTS
- OBJECTIVE - GAIN MUTUAL UNDERSTANDING OF COMPETITION
- REALITY - USG IS HAVING MANY TROUBLES IN FOSTERING COMPETITION
- MACRO-LEVEL POLICY VS MICRO-LEVEL IMPLEMENTATION

BOTTOM LINE - COMPETITION IS AN EFFECTIVE ACQUISITION TOOL

WHAT IS REASONABLY EXPECTED AS COMPETITION GOALS?

WHAT IS MEANT BY COMPETITION?

- PRICE OF INSTANT CONTRACT
- LIFE CYCLE COST
- DTUPC
- PERFORMANCE (TECHNICAL)
- PAST CONTRACTOR PERFORMANCE
- DELIVERY SCHEDULE/EXPERTS/EXCLUSIVE HIGHLY SPECIALIZED EXPERIENCE

WHAT CAN BE DONE TO MAINTAIN COMPETITION INTO PRODUCTION?

BARRIERS TO COMPETITION

- SPECIALIZED FACILITIES, EQUIPMENT AND PERSONNEL
- LEGAL
(8A + EEO + WOMEN-OWNED BUSINESS + LABOR SURPLUS + ETC.
= HIGH OVERHEAD + PROFIT LIMITATIONS)
- PSYCHOLOGICAL (REWARD SYSTEM TO PM, KO, ETC.)
- FISCAL (SHORTAGE OF UP-FRONT MONEY + MANPOWER CONSTRAINTS)
- TOTAL WEAPONS SYSTEM RESPONSIBILITY (TWSR)

BENEFITS OF COMPETITION NOT WELL UNDERSTOOD NOR DOCUMENTED

DETERMINING AND FORECASTING SAVINGS FOR COMPETITION

- DATA BASE AVAILABLE FOR MISSILES, ELECTRONICS AMMUNITION, BREAK-OUT OF AVIATION ITEMS (USA)
- SAVINGS METHODOLOGIES HAVE BEEN DEVELOPED
- PRIMER DEVELOPED ON COMPETITION PROVIDING GUIDELINES ON ACQUISITION STRATEGY DEVELOPMENT
- SENSITIVE TO PRODUCTION RATE CHANGES, BUSINESS CONDITIONS & PRODUCT MIXES
- FRONT END INVESTMENTS ARE LARGE AND BENEFITS UNCERTAIN

IS INDUSTRY AND GOVERNMENT STRUCTURED PROPERLY FOR COMPETITION?

- SPLIT SOURCES/DUAL SOURCES - LENDER/FOLLOWER (DAR 4-703)
- SECOND SOURCES - EDUCATIONAL BUYS
- TEAMING (DAR 4-117) - LICENSED PRODUCTION
- ASSOCIATE CONTRACTORS - F³
- BREAK-OUT - COMMERCIAL BUYS (ADCP)
- BREAKDOWN OF TASKS (O&M) - INTERNATIONAL PROGRAMS
- ENGINEERING/TECHNICAL SUPPORT FOR - FUSION/FISSION
VALIDATING TDP's
- GOVERNMENT ASSUMING TOTAL SYSTEM PERFORMANCE
RESPONSIBILITY (TSPR)
- p³1

ACQUISITION STRATEGIES

- DEVELOPMENT OF A SECOND SOURCE (MLRS)
- TEAMING (ASPJ)
- PRODUCTION COMPETITION OF PERFORMANCE SPECS (GAU-8 AMMO AND SHORT RANGE RECOVERY HELICOPTER)
- P³I COMPETITION (ALR 67/69)

MEASUREMENT & CLASSIFICATION OF WHAT IS COMPETITION, INCLUDING REPORTING

COMPETITION OPTION SHOULD CONSIDER ALL ECONOMIC FACTORS

APPENDICES

AGENDA

ATTENDEES

BIBLIOGRAPHY

DOD/OFPP COMPETITION

FINAL

WORKSHOP AGENDA

MAY 12-13, 1981

1st Day, May 12, 1981

INTRODUCTORY TALKS

- 0900 - OPENING REMARKS (MR. TRIMBLE/MR. SOWLE)
- 0930 - OVERVIEW AND ADMINISTRATION (R. WILLIAMS, ARMY)
- 1000 - DISCUSSION
- 1030 - COFFEE

COMPETITION PLANNING (M. LABOVITZ, DOT (USCG) - CHAIRMAN)

- 1100 - TYPES OF COMPETITION-CONCEPT/ (CAPT W. WASHBURNE, NAVY)
DESIGN/PRICE
- 1115 - COMPETITION STRATEGIES-PROTO- (J. KUNSEMILLER, AIR FORCE)
TYPES/TDP/LEADER-FOLLOWER/ETC.
- 1130 - BARRIERS TO COMPETITION-UNCER- (E. LOVETT, DOE)
TAINTY/INVESTMENT/TIME/
MARKETPLACE/OTHER
- 1145 - DISCUSSION
- 1230 - LUNCH

THE COMPETITION DECISION (P. ARVIS, ARMY - CHAIRMAN)

- 1330 - MULTIPLE LAUNCH ROCKET (J. DALY, ARMY)
SYSTEM (MLRS) EXPERIENCE
- 1400 - APRO STUDIES (W. WILLIAMS, ARMY)
- 1430 - DISCUSSION
- 1515 - COFFEE
- 1530 - RAND STUDIES (J. HILLER)
- 1600 - PUTNAM, HAYES, BARTLETT (W. DRINNON)
STUDIES
- 1630 - DISCUSSION
- 1730 - SESSION CLOSING

2D DAY, MAY 13, 1981

SESSION OPENING

0900 - OVERVIEW AND ADMINISTRATION (J. SPAGNOLA, FAI)

THE COMPETITION DECISION (CONT'D)

0915 - TASC STUDIES (J. GANSLER)

0945 - IDA STUDIES (P. CARRICK)

1015 - SHORT RANGE RECOVERY
HELICOPTER EXPERIENCE (R. WILLIAMS, COAST GUARD)

1045 - COFFEE

1100 - ADVANCED TACTICAL AIRCRAFT
PROJECTION SYSTEMS (ATAPS)
EXPERIENCE (CAPT W. CARLSON, NAVY)

1130 - ALR 67/69 RADAR MODIFICATION
EXPERIENCE (J. TALLEY, USAF)

1200 - DISCUSSION

1230 - LUNCH

OPEN DISCUSSION (J. FARGHER, DSMC - CHAIRMAN)

1330 - AREAS FOR DISCUSSION
(PROBLEMS, OPPORTUNITIES)

CLOSING ADDRESS

1500 - RESEARCH AND POLICY AGENDA (MR. SOWLE/MR. TRIMBLE)

1530 - CLOSE

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